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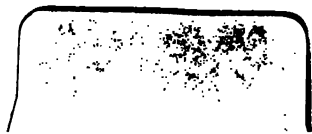
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44. 25.





THE ANIMAL KINGDOM.

A SIMPLIFIED ARRANGEMENT

OF

ANIMAL HISTORY,

ON THE SYSTEM OF CUVIER,

WITH THE

CLASSES AND ORDERS OF THE FIRST SUB-KINGDOM,

INCLUDING

MAMMALIA, BIRDS, REPTILES, & FISHES,

SCIENTIFICALLY ARRANGED:

CONTAINING AN INTERESTING AND CORRECT ACCOUNT OF THEIR
FORMS, PECULIARITIES, HABITS, AND LOCALITIES;

IN THE COURSE OF WHICH ARE EXHIBITED
THE MOST PROMINENT INSTANCES OF DESIGN.

BY AN EXPERIENCED TEACHER.

LONDON:

LONGMAN, BROWN, GREEN, AND LONGMANS,
PATERNOSTER-ROW.

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1844.



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IN laying the following pages before the Public, the Author feels that no apology is necessary; though there are many Works on NATURAL HISTORY, they are all, either from price, matter, or arrangement, to some extent unfit for the Schools, for which this work is more especially intended. That the study of Zoology is both interesting and instructive, few persons will deny; few subjects of a secondary character, furnish so many instances of wise design and beneficent Providence. In every animal among the millions which tenant the globe, from the "Great Leviathan of the deep," to the smallest animalcule discoverable by the aid of a microscope, some instance of design will be

obvious to the observer. And this design may be seen, not only in the formation of animals, but in their habits, instincts, clothing, and distribution. This design, the Author has endeavoured to notice and illustrate, and hopes that his labour to amuse and to instruct, will not have been in vain.

August, 1844.



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INTRODUCTORY CHAPTER.

AMONG the first persons who appear to have turned their attention to the subject of Animal History, was Aristotle, the tutor of Alexander the Great, who lived about 330, B. C. Aristotle, from his connection with Alexander, travelled over a wider extent of country probably than any other of the ancient philosophers; and this wide range, united with his profound observation, led him, among other studies, to observe the differences in the forms and habits of animals, which he afterwards made the basis of his system. He divided the animal kingdom into two great sections; the higher having red blood, corresponding with the Vertebrata of Modern Naturalists, and the lower having a colorless fluid instead of blood, corresponding with what we shall call Invertebrata. The defects of this system, would be seen at once by any Naturalist of the present day; but when we consider the difficulties the great Philosopher had to overcome, we must give him credit, both for profound observation and vigorous research. He well deserves his title, as "Father of the Science."

However defective the arrangement of Aristotle might have been, it appears to have been followed by Naturalists generally, until after the discovery of America, by Columbus, in 1492, when so many new species of animals were introduced to notice, that fresh attention and increased energies were directed to this

study. Comparatively little was done, however, until the time of Linnæus, the celebrated Swedish Naturalist; he, in his "System of Nature," published about A.D. 1750, adopted the circulatory system, but with more minuteness than Aristotle. He divided animals into three great sections; animals with warm red blood, having a heart containing four compartments, two auricles and two ventricles, including mammalia and birds; animals having cold red blood, a heart provided with two compartments, one auricle and one ventricle, including reptiles and fishes; and animals having a cold white, or colorless fluid, instead of blood, which he called sanies, and a heart with only one cavity, called an auricle; this section included all animals without back-bones. This arrangement of Linnæus, though much better than any which had preceded it, was not thought sufficiently accurate, and several distinguished persons tried to improve it, or rather to found others. Among the most eminent of these may be mentioned John Hunter and Baron Cuvier. Hunter, rendered eminently illustrious by his profound and accurate researches into, and illustrations of, the comparative anatomy of the animal kingdom, divided animals into five great sections, characterized as follows;—Creatures whose hearts are divided into four cavities or compartments, including mammalia and birds;—Creatures having hearts consisting of three cavities, as reptiles and amphibia;—Creatures having hearts with two cavities, as fishes, and mollusca or soft animals;—Creatures having but one cavity in the heart, as the articulated or jointed animals; and those animals in which the circulation and digestion are performed by the same organ, as the zoophytes or plant-like animals.

In this arrangement, it will be seen, that Hunter, like Linnæus, adhered to the circulatory system, though had he been permitted to live longer, there is little

doubt, but that he would have produced another system, as he is known to have turned his attention to the nervous and other systems, as well as the circulatory.

Baron Cuvier, an eminent French Naturalist, in his Animal Kingdom, differed essentially from all the rest in his arrangement, choosing the nervous system rather than the circulatory, as the basis of his system. He divides the Animal Kingdom into four great sections, the three first of which he correctly names from their external appearance and internal formation; but the fourth is confessedly made of animals differing essentially from each other in many respects, and therefore not so correctly named. They are named respectively as follows:—Vertebrata, or Backboned Animals: Mollusca, or Soft Animals: Articulata or Jointed Animals; and Radiata, or Rayed Animals.

VERTEBRATA, are distinguished by having an internal nervous centre or axis, formed by the brain and spinal cord, enclosed in a bony or grisly case, called a backbone. This section includes mammalia, birds, reptiles, and fishes.

MOLLUSCA have no central axis, nor backbone, the nerves are in various parts of the body, arranged in small masses. This section includes snails, slugs, oysters, muscles, &c.

ARTICULATA have masses of nervous matter arranged in two parallel lines along the under surface of the body, branching off into its various parts. This section includes insects, crustacea, worms, &c.

RADIATA, as we before said, is made up of animals essentially different from each other in some respects, but generally distinguished by rays proceeding from a centre; it includes the sponge, coral insects, &c. Of these, the only section which we shall notice especially is the Vertebral, or Backboned Division.

The Division, or Sub-kingdom Vertebrata, (from vertebra, a joint of the back), is again divided into four

classes, which differ in various particulars from each other.

The First Class of the sub-kingdom Vertebrata, is called Mammalia, (from mamma, a teat or pap). It includes animals which have red, warm blood, breathe through lungs, and are viviparous, that is, they produce their young alive; they are all milkgivers, and suckle their young.

The Second Class is called Aves, (from avis, a bird) and includes all the feathered tribes. They are warm blooded, and oviparous, that is, the young are produced from eggs.

The Third Class is called Reptilia, (from repo, to crawl), and includes tortoises, lizards, serpents, and frogs. These are all oviparous, and cold blooded.

The Fourth Class is called Pisces, (from piscis, a fish), and includes those animals, which inhabiting water, are cold blooded, oviparous, covered with scales, and at the same time, breathing through gills instead of lungs.

A TABULAR VIEW OF CLASS MAMMALIA.

ORDER.	SECTION.	EXAMPLE.
Bimana, or Two-handed		Man
Quadruman, or Four-handed ..		Apes, Baboons, Monkeys, and Lemurs.
Carnaria, or Killers	Cheiroptera ..	Bats.
	Insectivora ..	Mole, Hedgehog, Shrew, Musk Rat.
	Carnivora	Cat, Lion, Dog, Tiger, Wolf, Hyena, Weasel, Stoat, Ferret, &c.
Marsupialia or Pouched Animals		Kangaroo, Opossum, Platypus, &c.
Rodentia, or Gnawers		Beaver, Hamster, Squirrel, Mouse, Rabbit, &c.
Edentata, or Teethless Animals..		Sloth, Armadillo, Anteater, Manie.
Pachydermata, or Thickskinned	Proboscidea	Elephant.
	Ordinaria	Rhinoceros, Hippopotamus, Hog
	Solipeda	Horse, Zebra, &c.
Ruminantia, or Cud-chewers		Camel, Llama, Musk Deer, Giraffe, Deer, Antelope, Iope, Ox, Goat, Sheep.
Cetacea, or Whale-like Animals		Whale, Norwhal, Porpoise, Grampus, Whale, Manati, Dugong.
	Carnivora	
	Herbivora	

The Author recommends that copies of the above be made on large paper and pasted on boards, to be repeated as a Lesson, after the Teacher or Monitor. The arrangement would by such means, be more easily committed to memory. It might be set to Music with as much ease as the Multiplication and other Tables, leaving the Examples for future Lesson.



CLASS MAMMALIA.

The Class Mammalia is divided into nine orders, differing from each other in particular points, which differences we shall endeavour to illustrate. They are named as follows, viz.—Bimana, or Two-handed Animals; Quadrumana, or Four-handed Animals; Carnaria, or Killing Animals; Marsupialia, or Pouched Animals; Rodentia, or Gnawing Animals; Edentata, or Toothless Animals; Pachydermata, or Thickskinned Animals; Ruminantia, or Cud-chewing Animals; and Cetacea, or Whale-like Animals.

ORDER BIMANA.

The Order Bimana, (so called from the latin *bis*, two, and *manus*, a hand), includes Man, the only example. Of Man there are five distinct races, named from the districts whence they originated, or from their colour.

The First of these Races is called the Caucasian, inhabiting Europe, Western Asia, and that part of Africa lying north of the Atlas Mountains; they are a white or fair complexioned race, of handsome figure and agreeable aspect, with round or oval shaped heads, and flowing hair.

The Second Race is called the Mongolian Race, from their having originated in the districts of Eastern Asia, called Mongolia. They inhabit Eastern and Northern Asia, and may be distinguished by their olive complexion, heads rather square, faces flat, and hair coarse and straight. The Esquimaux of Greenland, and the Laplanders, are supposed to belong to this Race.

The Third Race is called the African or Negro

found is on the Rock of Gibraltar, in the South of Spain. In general, these animals are said to be extremely mischievous and imitative in their habits, to prove which, many stories have been told, some true and others false. They are often a great source of vexation to gardeners and planters, in the countries where they abound, as they will come in bands from their native forests to the cultivated lands, and in the silent watches of the night, commit great havoc among the fruits and vegetables, taking great care to guard against surprise, by placing sentinels on the watch. These tribes approach nearest to man in their general appearance and formation, and the careless observer would think there is a greater resemblance by far than there really is: the Apes which are the most like man of all the Quadrumana, on a close examination are found to differ materially from Man. The hinder or lower limbs, unlike man's, are used as before mentioned, for climbing, whereas in man, the lower limbs are formed expressly for supporting him in an upright position, which is not the natural position of any of the Quadrumana.

This Order is separated in three Divisions, including Apes, Baboons, and Monkeys. The first are without tails; the Baboons have tails of a middling length, and in some instances very short; Monkeys have the tail very long, and in some cases longer than the body; those of America having the tail long and at the same time prehensile, that is, they are enabled by winding it round a branch, to suspend themselves by it, and in many the muscles are so strong, that if the Monkey be shot dead when in that position, it will sometimes continue stiff and rigid, and the dead body hangs on the tree till it becomes corrupted and falls to pieces. The Quadrumanous tribes of the Old World have the teeth like those of man, in number and position, that is, eight tussocks or cutting teeth, four canines, or tear-

ing teeth, and twenty molars or grinding teeth ; those of the New World have the number of grinders increased to twenty-four, thus giving them thirty-six teeth instead of thirty-four.

The Ape family includes the Ourang Outang, the Chimpanzee, and the Gibbons. The Ourang Outangs are natives of several of the East Indian islands, where from their ferocity, they are much dreaded by the natives. Some specimens have been brought alive to England while young, and have seemed to be harmless and inoffensive, but they have died before arriving at their full size, and therefore may not have shewn their natural disposition, as the grown-up Ourang would have done. In Sumatra, the natives believe that the Ourang is the lord of the forest, and that it is inhabited or animated by the souls of some of their ancestors ; they are therefore very much afraid of injuring or even disturbing them. Captain Hall when looking for one, discovered a female sitting on a bough, with a young one in her arms ; he fired and wounded her, when she uttered a piercing cry, and lifting her young one as high as she could reach with her long arms, let it go among the branches, at the same time watching its flight attentively, and making no effort to escape. Some of the young Ourangs brought to Europe, have proved very docile, and apparently affectionate to their keepers, in some cases scarcely bearing their absence with patience. They have, in common with nearly all the Quadrumanous tribes, a great dread of Reptiles, more particularly Snakes and Tortoises. They have been taught to use a fork and spoon, and to sit at table with ease and gravity.

The Chimpanzee is a native of Western Africa, where it is much dreaded by the Negroes. It builds huts for itself, they say, and when a hut or village is deserted by the natives, the Chimpanzee takes possession of it. From their general docility, gentleness and

intelligence, some young ones which have been brought to Europe, have attracted considerable attention, but none of them have lived to attain their full size or age. They approach nearer to Man, in some respects, than the Ourang Outang.

The Gibbons differ from the Chimpanzee and Ourang Outang, in being much more slender in form and active in their habits, and in having the arms and hands of an extreme length, and peculiarly formed for clinging. They are found in the East Indian Islands. The most remarkable of the genus are the Agile or Active Gibbon, and the Siamang. The Agile Gibbon is remarkable for its extraordinary activity; a specimen exhibited in London several years since, having often amused visitors by jumping a distance, sometimes of twelve, fourteen, and even of eighteen feet, without apparent effort, keeping up a succession of leaps in various directions, for a considerable time. This was a female, and in a state of confinement, we may therefore form some idea of the activity of the Gibbon in its wild state.

The Baboons, differing from the Apes, are furnished with tails, varying in length in different species; they are likewise known by the form of the head, which approaches nearer to the head of a mastiff dog than any other animal. They generally, while on the ground, move on all-fours, and feed chiefly on roots of various kinds. They are altogether more ferocious and disgusting, both in appearance and habits, than the rest of the Quadrumana. The most remarkable are the Mandrill, Drill and Chaoma. The Mandrill is a native of Western Africa, and is much dreaded by the natives, who assert that they have often endeavoured to carry off the negroes into the woods. This animal may be known by its yellow beard, and the blue and scarlet stripes on the cheek bones, which are large. The Drill resembles the Mandrill in form, but is not so stout; the face is of a glossy black colour, the beard

short and orange coloured ; its habits are those of the Mandrill, and they have often been supposed to be the same species.

The Monkey tribes are furnished with long tails, and are much more slender than the Apes or Baboons ; the thumb is much smaller than in the others, and not so fully developed. Many of the species are furnished with cheek-pouches, and in nearly all, the fur is long and glossy. Among the Monkeys of the Old World, the most remarkable are the Kahau, or Proboscis Monkey, and the Entellus. The Kahau or Proboscis Monkey has a remarkable lengthening of the nose, having the nostrils beneath. In the male the beard is long and curls upwards over the chin. It is found only in the forests of the Island of Borneo. The Entellus or Hoënuman of India is held sacred in many parts of that country by the natives, and some authors assert, that they are not only protected, but in many parts actually worshipped ! The Brahmins feed them, and in some towns of Hindostan, the tops of the houses are given up entirely to them.

Mr. Forbes, in his *Oriental Memoirs*, mentions one town (Dhuboy) where the number of monkeys is greater than the number of men ; food is laid on the tops of the houses for them, at different times during the week. The greatest enemies to the Monkey tribe are Snakes, between which and the Monkeys a constant warfare is carried on. The Snake seizes the smaller Monkeys when he can get near enough to them, and devours them ; in return, the Monkey takes the opportunity, when he finds a Snake asleep, to seize him so as to prevent his biting, and having secured him, he rubs the Snake's head on the nearest stone till he grinds away the fangs, and when the Snake can no longer injure other animals, he throws it to his young ones, who amuse themselves by playing with their enemy, now no longer able to injure them.

The Monkeys of America differ from those of the Old World, in the form of the fore hands, which have not the thumbs opposed to the fore-fingers, and in having no cheek-pouches; the nostrils are always on the sides of the nose, and not directly beneath it. They include the Howling Monkeys, the Spider Monkeys, and the Marmozet. The Howling Monkey is remarkable for the strength and clearness of the voice, which is caused by a peculiar formation in the organs of sound. They are heard in the evening, through the night, and "at early dawn," and the noise they make in South American forests, where they abound, is said to be astounding. In common with most others of their genus, the Howlers are eaten by the natives of America, who have a particular relish for them, as they are usually fatter than others. They roast them whole over a clear fire, and their appearance is then so hideous, that few Europeans can eat them; they do however eat them when they have been cooked without the head and hands, and some have thought the flavor excellent.

The Spider Monkeys are smaller in size than the Howlers, and from the length and awkwardness of the hands, they cannot move well on the ground; their tails are eminently prehensile, and assist them much in climbing, holding, and in feeling for their food.

The Marmozets are among the Monkey tribes what the Paroquets are among Parrots. They are generally very small, elegantly formed, and peculiarly sensible of cold, for protection against which, they are furnished with a very thick close fur. They feed on fruits chiefly, though they are likewise very fond of insects of any kind. Many have been brought to Europe, where they are favorites from their diminutive size, though in our climate, they are chiefly employed in keeping themselves warm, by drawing everything into their nest that is likely to assist them in doing so.

Besides the Monkeys we have mentioned, there is another family called the Lemurs, found in various parts of the world. They differ from others in having the head lengthened and the muzzle pointed like a fox, eyes large and full, and the hinder pair of limbs considerably longer than the front pair. The number of teeth, like the American Monkeys, is thirty-six. Most of them inhabit the island of Madagascar; they are omnivorous, that is, they feed on fruits, reptiles, mice, small birds, eggs, and insects. They include the Ruffed Lemur, Flocky Lemur, the Diadem Lemur, the different varieties of Loris, and the Tarsiers; all of which are found too delicate to flourish for any considerable time in England.

ORDER CARNARIA.

The Third Order of the Class Mammalia is called Carnaria, or Killing Animals, (from *carnarius*, a butcher), and includes the greater number of those animals which are distinguished by their flesh eating propensities. They may be known generally by the teeth; the incisors or cutting teeth in front are very small, the canines or tearing teeth very large and strong, with the molars or grinders very strong, having the surface pointed. This Order is divided into three subdivisions, viz.—Cheiroptera, or Handwinged; Insectivora, or Insect-eating; and Carnivora, or Flesh-devourers.

Cheiroptera (from *cheiros*, a hand, and *pteron*, a wing), includes the Bat tribes only, which are thus named from the curious membrane which unites the hand to the foot, enabling them to support themselves in the air, and thus gives them an opportunity of procuring their food, which consists principally of insects. Bats have the senses of hearing and sight astonishingly acute, many experiments having been tried to prove

this. Some, however, appear to possess the sense of touch or feeling much more acutely than either sight or hearing. This sense is supposed to exist in the highest degree in the wings of the animal: some have had their eyes cruelly taken out, or been otherwise deprived of sight, but on being let loose in a room, filled with obstacles, they have been found to avoid everything that came in their way with as much apparent ease as before. Bats are all nocturnal, and in some parts of the World extremely numerous: they are divided into several tribes, according to their structure, or the form and position of the teeth. The Bats of cold climates are torpid during the winter, their food at that time being scarce.

The Bats vary much in size in different parts of the World, those of the tropical regions being much larger than those of colder climates. The most remarkable of these is the Vampire Bat of South America, which grows to a large size. This Bat receives the name of Vampire from its habits of sucking the blood of animals while asleep. Having made a very small wound in some part of the body where the blood flows freely, they insert their small pointed tongue into the wound, and silently draw the "tide of life" from the sleeper, at the same time fanning with their enormous wings, which helps to soothe the slumbering victim. They generally attack the naked feet of human beings while asleep, but cattle they more commonly bite in the ear. This bloodsucking habit was for some time doubted among Naturalists, until Mr. Darwin, while travelling in America, discovered one in the act of sucking the blood of one of the horses, and secured it. The small place on the horse's shoulder where he had been bitten, was found to be swelled the next morning, but was soon healed.

Besides the Vampire Bat may be noticed the Leaf-nosed Bat of Brazil and the Kalong of Java, both

fruiteating Bats. The Kalong of Java is very large, measuring five feet from the tip of one wing to the tip of the other. They hang on trees with the head downwards in the day, coming out one by one in the night, when they visit the orchards and fruit gardens, and devour such quantities of the finest fruit, that the natives are obliged to cover up their best trees with loose network, to keep off the Kalongs. They offer a curious sight to the traveller, when a great number are seen hanging on a tree with the head downwards, in perfect silence, looking at a distance like monstrous large fruit suspended from the branches. If disturbed while in this state, they emit sharp piercing shrieks, and seem perfectly bewildered by the glare of light, which they encounter, when they open their eyes.

. INSECTIVORA.

The suborder Insectivora, (from *voro*, I devour), includes the Mole, Shrew, Hedgehog, and Musk Rat. They are all small animals, timid in their habits, and seldom seen on the surface of the ground, those of them which are not burrowers, living during the day in hedges and holes, and being nocturnal.

The Mole is a miner, living entirely under ground, burrowing for himself long and intricate galleries, through which he passes as often as hunger calls him, to procure the various worms and insects that he may find. The form of the body is in strict accordance with the habits of the animal; the body round and compact, the limbs short, and the snout long and pointed. The fore legs terminate in a thick pair of solid paws, having five toes on each, scarcely divided, and armed with strong flat claws, which serve for scouping out the earth, and are so placed, that the earth is not scraped beneath the belly of the mole, but sideways; thus, by means of their strong claws, they break up the earth, and with their long snout they

root amongst it to find the insects and worms which it contains. It is common to say "as blind as a Mole"; this is an error, for though the eye of the Mole is not to be discovered without difficulty, they are well known by Naturalists to have small eyes. They have likewise a most exquisite sense of hearing, though the same difficulty occurs in finding anything like an ear, but the reason why the eyes and ears of the Mole should be very small and nearly hidden, is easily understood, when their habits of scratching up mould and dust are considered, for if the eyes or ears were large the animal would be much inconvenienced by it; its organization therefore, evidently shews design in the Creator.

The Hedgehog is another common animal belonging to this suborder. It is not a miner, though insectivorous, but obtains its food by rooting about on the surface of the earth, for this purpose, being provided with a lengthened snout. It is known by its spiny covering, which is its only means of defence; when attacked, it can roll itself into a ball, the surface of the body presenting a spiny appearance, which usually deters most animals from biting it. It is of a grey color, and usually about ten inches long. It lives on frogs, toads, and insects of various kinds, and is nocturnal in its habits. It is remarkable for patience. Pennant tells us of one which was cruelly dissected alive, the feet being nailed to the table; the poor animal endured this, and the agony caused by the operator's knife, without uttering a single cry. This however is not always the case, as we ourselves have heard them utter the most piteous cries, from merely having one leg rubbed across with a piece of stick. They roll themselves up and lie torpid during winter among leaves.

The suborder Insectivora also includes the Shrew, the Tenrec, and the Deaman or Russian Musk Rat. The Shrew is a pretty little animal, only differing in

appearance from the Field Mouse in having a longer snout, for the purpose of hunting up insects. They are common in our fields and hedges, and are often killed by cats, which however will never eat them, as they have a number of glands on the sides of the body, in which they form a musky kind of liquid, which hinders the cat from eating them after they are caught. This scent however does not hinder hawks, owls, and weasels from devouring the poor little shrew, they being less particular in taste than the cat. The English Shrew is of a reddish brown color, and pale underneath; it makes a chirring noise, and may be often heard when it is not seen.

CARNIVORA.

The third subdivision of the Order Carnaria is called Carnivora, or Flesh-devourers, (from Carnis, flesh, and voro, I devour). This division includes all those animals which are essentially animals of prey, and is divided into three families, viz. Plantigrada, or Footwalkers: Digitigrada, or Toewalkers; and Amphibia.

Plantigrada.

The first family called Plantigrada, or Footwalkers, (from planta, sole of the foot, and gradus, a step), so called because they plant the whole foot on the ground, includes the Bears, Racoons, Badgers, Coatimondis, and Kinkajous. The Bear tribe contains three principal varieties, viz. the Polar Bear, the Brown Bear, and the Black Bear. The Polar Bear is found almost exclusively in the Arctic Regions of the World, and feeds on seals, fish, and small animals. They are often seen on icebergs, out at sea, the ice having parted from the continent and floating away with them. All the Bear tribe lie torpid during the winter, and the Polar Bear buries itself in the snow. They are very fierce, and are much dreaded by the Esquimaux and

Greenlanders. They grow to the length of ten or twelve feet, and are more slender in proportion to their bulk, than the Brown or Black Bear. They are hunted by the Indians of North America, who go out with as much ceremony to attack a White Bear, as they would to a war with a hostile tribe. Many instances are related of their ferocity; Bewick relates, "that not many years ago, a Boat's Crew, belonging to a Whale ship, shot at, and wounded a Bear at a little distance; the animal set up a dreadful howl, and ran along the ice towards the Boat. Before he reached it, he received another shot, which increased his fury. He swam to the boat, and on reaching it, placed one of his forefeet on the gunwale, but one of the crew having a hatchet cut it off. The Bear however still continued to follow the boat, till it reached the ship, when he followed the crew up the side; the sailors alarmed at his fury ascended the rigging, when the Bear, in attempting to follow them, was shot dead." The chief food of the Bear is the seal, and his mode of taking it is curious; when looking for prey he discovers a seal asleep on the ice, he gets between the seal and the wind, that the seal may not scent him, and diving repeatedly to hide himself, comes up at last close to the edge of the ice, when the poor seal is reduced to the alternative, either of jumping into the mouth of the Bear, or being devoured on the ice by the Bear, at his leisure.

Crantz, in his History of Greenland, says, that the Polar Bear is often attracted to the villages by the smell of seal's flesh, and that the best mode of driving him away, is to burn feathers. He also states that Bears will come in numbers and attack the caves in which the natives reside during the winter and sometimes succeed in breaking in and destroying the whole community. Their young ones are generally produced in winter, during the time they are lying torpid, and

they come forth in the spring very thin and fierce. Some writers have said, that the Bear can swim to a great distance, but that is not positively ascertained, though Buffon, on the contrary, asserts, that they can seldom swim more than a league, and that they are followed by the Norwegians, in boats, who attack them when they become exhausted.

There are several varieties of the Brown and Black Bear, but they resemble each other in most particulars. They are all omnivorous, feeding not only on flesh, but on fruits and honey, of which last they are in general extravagantly fond, and some of them will gnaw through the bark and outer part of a tree, to get at the honey contained in its hollow.

From the various fossil and other remains of Bears found in the British Islands, we have great reason to believe that they formerly inhabited it, though it must be several centuries since; no mention being made of them in our histories generally; but in 1057, the King of Scotland gave leave to one of the Gordon family, to carry three Bears in his banner, for his valour in slaying a Bear. They were imported in the time of Elizabeth to be baited, many of the great people of England, as well as the Queen, having Bear Gardens. Most of the Bears are good climbers, and thus are enabled to procure fruit and honey, which they do, from the most difficult situations. Among the Bears, we may notice the Black and Grizly Bears of North America, Brown Bear of Europe, the White Syrian Bear, and the Bears of the East Indian Islands.

The Raccoon is a native of North America, and the West Indies, about the size, and having something of the appearance of a fox. It feeds on birds and insects, with eggs, roots, fruits, and even shell-fish; it can open the oyster, the jaws being of sufficient strength to break the hinge of the shell. It has also a curious mode of obtaining the crab; watching by the shore, it

lays its tail a short distance in the water, the hungry crab thinking it lawful prey, seizes hold of it, and as soon as the Racoon feels the pinch he moves forward and draws the crab on the land, where he soon finishes him. The Negroes eat the Racoon and think it a delicacy.

The Coatimondi a native of South America, resembles the Racoon, but has a longer snout ; it is a better climber than most other animals. Its habits and manner of living very much resemble the Racoon ; it is rather larger, the snout is in constant motion, and is like that of the Hog in shape, but is much more flexible, being destitute of bone ; it is never dipped in water, being turned up while the animal is drinking.

The Badger is an animal common in Europe, and is known by its grey colour, with two stripes of black on the sides of the head, which is nearly white. They are burrowers, and nocturnal in their habits, feeding on frogs, mice, young rabbits, eggs, and sometimes roots. They were formerly caught and preserved for the brutal amusement called badger-baiting ; the Badger being placed in a tub lying on its side and a dog set to draw him out ; this, from the looseness of the Badger's skin, and in the great strength of its jaws, was considered a great feat, and the dog who succeeded in drawing a Badger, had established his character. In some parts of the World the flesh of the Badger is eaten, and thought very good, as in China, and some parts of North America. The favorite part is the ham, which is said to resemble the flesh of the Bear.

The Badger is caught at night, by having a long net or sack thrust into its hole, and pegged down by its mouth on the outside, while the Badger is out food-hunting, it is then hunted home, and caught in the bag by the man who is on the watch for it.

The Kinkajou is a remarkable animal of this family,

found in South America, much resembling the Coati-mondi in form, being about the size of a large cat, but much stouter; it has a remarkable tongue, long and narrow, which is thrust into holes and crevices of trees, among which it chiefly lives; this tongue, like that of the Giraffe, can be thrust out, and used to draw things, and for other purposes. It is decidedly nocturnal, rolling itself up and sleeping during the day, being exceedingly active during the night. Its tail is to some extent prehensile, like those of the American Monkeys.

Digitigrada.

The Second Subdivision of Carnivora, is called Digitigrada or Toewalkers, (from digitus, a finger, and gradus, a step), and includes those animals which walk on the toes, as the Cat, Dog, Weasel, Hyena, and other tribes. The principal tribe of this division, is the cat tribe, including the Lion, Tiger, Puma, Jaguar, Panther, Leopard, Lynxex, &c. They differ from the other tribes of this family, in having their claws sheathed, to preserve them from becoming blunt; these claws being so formed that they are used or withdrawn at pleasure, by means of a peculiar muscle, they are nearly all able to climb with the aid of these sharp claws. Besides sheathing the claws, the Cat tribe is furnished with a soft ball in the centre of the foot, and one under each toe, the design of this is to enable them to steal silently on their prey, which they usually secure by springing on it suddenly.

Cat Tribe.

All the Cat tribe have the sense of hearing very acute, the tympanum of the ear being very large to admit the sound; the eye is also remarkable, both in its form and powers, the iris being so formed as to contract or dilate according to the light; in the day, being

scarcely open, but in the night, dilated to its full width, so as to collect all the rays of light, and though it is not ascertained that they can see best in the dark, it is well known that they see better in the dark than in the full glare of the sun's rays.

We cannot refrain from noticing the peculiar adaptation of the teeth of this tribe, to the habits of the animals. The cutting teeth are very small, the tearers large, and the grinders very large and strong; there is scarcely any sideways motion of the jaws, as they do not require to grind their food, as in the case of herb-eating animals.

The Lion is a native of Asia and Africa; it is usually of a light yellow colour, sometimes of a brown. The Lion of Africa is much larger, and more powerful than that of Asia, and grows to a large size, sometimes exceeding nine feet in length. It is usually nocturnal, but when pressed by hunger, will roam abroad during the day. Many curious tales are related by natives of South Africa, illustrative of their habits. They are said to have a great liking to the flesh of a Hottentot, and certain it is, that a Lion will follow a Hottentot in preference to an Ox, or a Zebra. It is related by Sir J. Alexander, in his travels in South Africa; that a Hottentot was once herding cattle, when he was followed by a Lion, who followed him through the midst of the cattle, and to escape, the poor Hottentot, clambered up a tree, and seated himself on a branch, whither the Lion followed him. After waiting a considerable time, hoping that the Lion would leave him, to seek some other prey, he found that the Lion shewed no signs of departure; he therefore composed himself to rest, and though under considerable alarm, as may be supposed, he soon fell asleep, the Lion having laid himself down under the tree, as if determined to wait till he obtained a meal off the carcase of the Hottentot. In this however, he was disappointed, for during the night,

the Hottentot dreamed that he slipped off the tree and fell into the Lion's mouth; this caused him to start violently, and in reaching forward to save himself, he lost his seat and fell on the Lion which was lying beneath him, this unceremonious introduction so alarmed the sleeping Lion, that he made the best of his way from the spot, and the poor affrighted Hottentot returned to his home, thankful at such a narrow escape. The strength of the Lion is enormous, he has been known to carry off a heifer, with as much ease as a cat would a mouse, and though followed for five hours by men on horseback, the body was only discovered to have touched the ground once or twice all the time. The Lion is hunted by the Wild Bushmen of Caffraria and the Cape, who shoot him while asleep, with arrows or javelins dipped in the sap of the Euphorbia tree, which is very poisonous. They watch him to his den, and while he sleeps, they try to pierce him with one of their weapons in the breast, if they succeed in fixing their weapon, they have then only to follow the track of the Lion, who immediately jumps up and runs off, and in the course of an hour or two is a corpse, ready to be cut up and devoured by the Bushmen, who consider the flesh to be a great relish.

The Tiger the next animal to the Lion in size and importance, is a native of Asia, and combines the strength of the Lion, with an extreme degree of cruelty in its habits. It is usually of a fine yellow or reddish yellow color and is ornamented by black bands or stripes down each side of the head, neck, and sides of the body having the tail also ringed with black; the under parts usually white. The Tiger is diurnal as well as nocturnal, and is much dreaded in consequence, as he will follow travellers through the jungle, for hours and even days, watching an opportunity of making a spring. The Tiger of Bengal is called the Royal Tiger, and is the largest and fiercest of the species. They abound in

most parts of India, and in some parts are held sacred by the idolatrous natives, who, in their ignorance and superstition, imagine that they are animated by the souls of their ancestors.

Tiger hunting is the favorite sport of Europeans in India, the principal hunters being mounted on Elephants, which are the only animals that will face the Royal Tiger, horses being generally much frightened at the sight of him. Many instances are related of their ferocity. A party of gentlemen being out on a shooting excursion, landed to take lunch on Sawgar Island, in 1792; while seated, and quietly enjoying their meal, an immense Tiger burst upon them, snatching up one and bearing him off into the jungle; the efforts of his friends to save him were entirely fruitless. He was the son of Sir Hector Munro, and a Lieutenant in the East India Company's service. The Tiger though so fierce in his wild state, is still capable of being tamed, if taken while young; he is then a lively, playful companion: but the old spirit will shew itself in the whole tribe if they are annoyed, and therefore care and kindness is necessary in the management of them.

The Leopard and Panther are very much alike in appearance and in habits; they are both active climbers, feeding on Monkeys, Antelopes and other small animals. They are both spotted with dark brown roselike spots, and much difficulty has arisen among Naturalists, in discovering the precise distinction between the two. In common with all the Cat Tribe, they are very fierce, and even when tamed it is dangerous to trifle with them. A gentleman kept one which was attended to by his servant, who was sometimes rather severe with his whip, notwithstanding the warnings he received. One morning the gentleman was roused by an unusual noise in the next room to his own, where the Leopard was kept, and there was

the animal playing with the head of the unfortunate servant, he having killed him and bitten off his head. A parallel case has lately occurred in a Menagerie, at Liverpool, the keeper, contrary to orders, going into the cage with his whip, and being killed.

A very elegant species of Leopard found in most parts of Asia and Africa, is called the Cheetah or hunting Leopard, and his used in the chase of the Antelope and various kinds of deer, at which time it is usually led blindfolded to the plain or place where the deer are discovered, and being uncovered it is then let loose, when it creeps on its belly near to the spot where a single deer is grazing, and springs on its neck, tearing the flesh and sucking the blood. But the best known animal of this tribe to Europeans, is the Cat, the tame species of which is well known both in its formation and habits, it is an excellent type of the tribe, in its teeth, tongue, feet-balls, and sheathed claws. The wild species however is not so well known; it is found in most parts of Europe and Asia, and was formerly common in Great Britain, though now it is seldom seen, except in the North of England, and some parts of Scotland and Ireland. It is larger than the tame species, and the tail is much thicker and blunt at the end. It feeds on hares, rabbits, and different kinds of game, and is a great scourge wherever it is found; it is very obstinate in defence of its young. It was till lately supposed that the Common Cat was of the same breed, but there appears to be a peculiar difference between them.

We must now notice the American species of this tribe, including the Puma, Jaguar, Ocelot, and some species common to the Old and the New World.

The Puma has been called the American Lion from its resemblance to the Lion in color, but it has no mane as in the Lion. The head is much smaller, and the limbs very thick, the tail very long and usually curled

up. They are active climbers, and feed on almost every animal that inhabits the forests of America. They are usually killed after having been driven into a tree by a dog, though if they are only slightly wounded they are very dangerous enemies. Their flesh is considered good eating by the natives of America, and their skins are made into gloves and women's shoes. The Pumas are very destructive animals, killing at times, many more animals than they can eat. They however, in common with most other animals, have an instinctive dread of man. Sir F. Head, in his "Journey across the Pampas," relates a circumstance which occurred to a person with whom he met in his journey. He was trying to shoot some wild ducks, and in order to approach them unseen, he drew his poncho, (a kind of blanket) over his head, allowing one corner to trail behind him on the ground. While thus crawling on his hands and knees near a bush of reeds, he heard a kind of roar, and felt something heavy strike his feet; on getting up he found a large Lion or Puma standing on his poncho, and being unwilling to fire as his gun was loaded only with small shot, he looked steadfastly at the Puma, which look the Puma returned, after standing thus for many seconds, the Puma turned his head and walked slowly off. But the most ferocious animal of the New World, is the Jaguar, the Leopard or Panther of America. It differs from the Puma in having a spotted body, and inhabits the warmer woods and marshy districts of South America. The Jaguar swims as well as climbs, and consequently is able to secure fish, (which it eats), as well as land animals. The Turtle likewise falls a prey to this animal, who watches for its coming on shore, when he turns it on its back and scoops out the flesh from between the shells, as clean as any man would think of doing; he also devours the eggs of the Turtle when he can find them, as well as the young when they are hatched.

The Indians kill the Jaguar with poisoned arrows, and he is a dangerous animal when wounded, from his extreme ferocity and strength.

Among the animals of this Tribe which are common to both the Old and New World, we may notice the Lynx, which may be known by the shortness of the tail, and the small tufts of hair, at the ends of the ears. Of these the Caracal is the largest. It is found in Asia and Africa, and is of a reddish brown color; it is said to follow the Lion, living on what the Lion leaves. The Lynxes are nocturnal animals, and in captivity, are much annoyed by the glare of light in the day; they are all very irritable, and almost untameable. One species is peculiar to Europe, and another to Canada, in North America. The skin of the Canada Lynx is valuable, and great numbers are obtained annually by the Fur Companies of that country.

Dog Tribe.

The next family of importance in the sub-order Carnivora, is that of the Dog. It includes a great number of varieties, many of which are the faithful companions and servants of man; found wherever man is found, and being of the utmost use to him in some situations. In this family we number the Wolf, Fox, and Jackal, as well as the common Dog, as they agree in formation. Of the great number of Dogs of different countries, we may mention a few of the most remarkable and useful. The Esquimaux Dog draws his master over the ice and snow in a sledge, catches the Reindeer and Seal, and performs various offices for him, for which he is usually paid by blows and half starvation; this however never lessens his faithfulness or attachment. The Esquimaux drives them in a pack, harnessed to his sledge, and travels in this manner at a quick rate, his dogs being satisfied if they can procure

a scanty meal from some of the offal, their master cannot devour.

Another very useful breed of Dogs, is that of Newfoundland, which is closely allied to the Italian Wolf Dog and the Dog of St. Bernard, so noted for its usefulness in guiding and preserving travellers and others over the Alps in snow storms. The Newfoundland dog is an expert swimmer, and many instances are related of its having saved the lives of persons in danger of drowning. The Alpine or St. Bernard dogs have likewise done much in saving life, one dog having been known to have saved the lives of twenty-two persons. The Mastiff is most useful as a house dog and protector of property. The Bloodhound, once so common in Great Britain is now nearly extinct, but one species abounds in some of the West India Islands, where they are employed by the planters to track their runaway slaves. The Shepherd's Dog is well known for its sagacity and fidelity, of which many instances have been related by Naturalists.

Mr. Jesse, in his delightful "Gleanings," gives a great number of most interesting anecdotes of the sagacity and fidelity of the Dog tribe, one or two of which I shall beg leave to extract. "A friend of mine took a Newfoundland dog and a small Spaniel into a boat with him, and when he got into the middle of the river near one of the locks, not far from Hampton Court he turned them into the water. They swam different ways, but the spaniel got into the current, and after struggling some time, was in danger of being drowned. As soon as the Newfoundland dog saw the predicament his companion was in, he swam to his assistance, took him in his mouth, and brought him safe to the shore." An acquaintance of Mr. Jesse, was one night reading in bed, and falling asleep, set fire to the curtains, and had it not been for a favorite terrier which always slept in his

room, he would doubtless have been burned to death. He was awoke by the dog violently scratching him with his forefeet, just in time to call for assistance to put out the fire.

The Wolf is a fierce animal formerly found in most parts of Great Britain, where it is now extinct. It inhabits most Northern countries, especially mountainous districts, and in some parts of Russia, is a dangerous neighbour, not hesitating at times to attack men and horses. They are usually nocturnal, but in winter when impelled by hunger, associate and hunt in packs, when they are so ferocious, that in a small district of Polish Prussia, in the year 1814, no less than nineteen persons were devoured by them, some close to their own houses. Among the Esquimaux, the American Wolf is more dreaded, both by men and dogs than the Polar Bear. They will readily attack the Bear, but a single Wolf will carry off a dog from among fifty others, without any attempt at resistance. King Edgar commenced the destruction of wolves in the British Islands, by ordering the Welsh to pay a yearly tribute of three hundred wolves heads.

The Jackal is an animal of great use in the countries where it is usually found. They are common in Asia and Africa, dwelling in troops, and roaming over the country during the night, devouring not only living prey, but all kinds of carrion and offal, and even fruits and vegetables, according to some writers. They are about the size of a fox, in some points resembling that animal, and their cry during the night, in the deserts and villages is most terrific and piercing.

The Hyena resembles the Jackal in its habits, but is larger and more ferocious in its disposition. It inhabits Asia and Africa, it being declared by Bruce, that in Abyssinia, the Hyenas seemed more numerous than the sheep, the towns and villages being filled with them during the night, hunting for carcasses and

offal. They as well as the Jackal are nevertheless, very useful in clearing away those substances, which if left to putrify, would breed pestilence and disease.

The Fox is an animal found in most Northern countries, being common in the British Islands. It may be known by its sharp nose, and bushy tail. It is remarkable for its cunning, and from his swiftness offers good sport to the hounds and huntsmen of England. The Fox feeds on game and poultry when he can get it, but when hungry will devour mice, frogs, and weasels. He is a burrowing animal, and very destructive in rabbit warrens and game preserves. The most curious of the species is the Arctic Fox, the color of which is said to change in winter from a lead color to a white, the fur at the same time becoming thicker, even to the soles of the feet, thus giving another instance of the benevolence of the Creator, towards even the meanest of his creatures.

Civets, Weasels, &c.

We now come to those Animals of the Toewalking family which furnish musk, including the Civet Cat, and the Genets. They are found chiefly in Africa and Asia, and furnish the substance, which in commerce is called musk. The Civet appears to secrete this substance, in the greatest abundance, the Genets not so much so.

Among the Toewalkers is placed the Ichneumon, an animal found in most parts of Africa, and very useful in destroying reptiles and noxious insects, but more particularly the eggs and young of the Crocodile. They are tamed by the Egyptians, and are to them what the Cat is to the Englishman. They will attack animals nearly of their own size with great fierceness, and somewhat resemble the Ferret tribe, both in form and character.

The Weasel, Stoat, Marten, Ferret, and Polecat, are

likewise ranked among the Digitigrada. They are all carnivorous animals, most of them killing more animals than they can eat, for the purpose, as it seems, of sucking the blood. The Ferret is used to hunt rats and rabbits out of holes and burrows, and is much valued by the Ratcatcher. It is usually of a white or brown color, with pink or light red eyes, and requires to be kept warm, as it was originally imported from Africa, to destroy rats.

The Polecat is common in some parts of England and Scotland, and in the winter time is a great pest to poultry yards, killing the poultry for the sake of the blood, to the number of ten or twelve in one night. Its chief defence is an extremely disgusting odor, which it causes when attacked. The Weasel is smaller than the Polecat, but resembles it in its habits, as it will attack indiscriminately whatever small animals come in its way. The same may be said of the Stoat and Marten, which however, are larger than the Weasel. Their usual mode of destroying their prey, is to bite through the back of the skull, into the brain.

The Glutton, Ratel, and Otter, are the only remaining animals to be noticed in this sub-division of the Order Carnaria. The Glutton is a native of the Northern parts of Europe, America, and Asia, where it preys upon various animals, some of which (as the Reindeer,) are considerably larger than itself. Its usual mode of proceeding is to drop from the branch of a tree, on the back of the animal, and holding tight with its claws, will tear the flesh, till the animal sinks from loss of blood, when the Glutton devours him at his leisure. This animal is nocturnal, and much disliked by the furhunter, whose traps he visits, taking out the animals caught therein, and destroying the skins by tearing them to pieces. Its color is a pale yellowish white, when young, but grows much darker, and the fur is much valued, by the furrier.

The Ratel somewhat resembles the Badger in form, though it is smaller ; it is a native of Asia and Africa. It is noted in South Africa for its fondness for honey, which he procures from the nest of the wild Bee. It also feeds on flesh, and according to some writers, upon roots. The Indian Ratel is said to feed on dead bodies which it scratches its way to in the cemeteries. The color on the back is grey, and black on the under parts.

The Otter is a native of Great Britain, and is found also in all the Northern parts of Europe, Asia, and America. Its color is usually of a dark grey, the head broad and flattened. It is an aquatic animal and feeds principally on fish. It makes its hole in the banks of rivers, and commits great havoc among the salmon and other large fishes. An instance of design may be seen in the fur of the Otter, which sits closely on the animal, being at the same time stiff and glossy, offering no resistance to the progress of the animal in the water. The tail is thick and powerful, and is used as a rudder by the Otter, while swimming.

Amphibia.

We have now to notice the last family of the Order Carnaria, that of the Amphibia. It includes the different kinds of seals, and the walrus. They are fitted for a residence either on land or in water ; their limbs approaching the form of fins, and being of the same use to the seal in the water. They are clothed with fur, the part next the skin being soft and warm, the fur on the outside being stiff and pressed closely to the body, so as to admit no water, and to offer no resistance to the motion of the seal while swimming. The seal is a native of all cold seas, and is the chief food of the natives of Greenland, and other parts of North America. Their bodies furnish a great quantity of oil which is burnt for light. They commit great havoc among the salmon, in the North parts of the British Islands, where

at certain seasons they are hunted for their skins and blubber or fat. Some of the largest afford a large quantity of oil, sometimes as much as from twelve to twenty-gallons.


All the Seal tribe appear to delight in basking in the sun on the rocks, at which time they may be approached if caution be used, so near as to shoot them; but if the least noise be made they slip off the rock into the water and disappear. The most curious varieties are the Elephant Seal with its lengthened upper lip, somewhat resembling an Elephant's trunk; the Sea Leopard, so called from its spotted skin; the Crested Seal, remarkable for the curious caplike hood on the top of its head; and the Ursine Seal. They are all gregarious, and feed on fish of various kinds; some of them, as the Ursine Seal, are also migratory, having certain particular places where they go in the breeding season. The Sea Lion is also of this tribe; it is found in the South Pacific Ocean, and is one of the largest.

The Walrus or Morse of the Arctic Ocean, resembles the Seal in its general formation; it however may be easily known by the enormous size of the canine teeth of the upper jaw, which are often two feet in length. These tusks are useful to the Walrus in various ways; they are weapons of defence, they assist it in climbing up rocks and icebergs, and also in tearing up the masses of seaweed, on which it feeds. It likewise feeds on animals, such as seals, shrimps, and the molluscous animals which abound in the Arctic Ocean. Its flesh is considered excellent food, by natives of the Arctic regions, but it does not yield so much oil in proportion to its size, as the seal, the fat being nearly solid. They are much more fierce than the seals, and have been known to attack boats which have been sent to take them, sometimes striking their tusks through the planks of the boat, and causing considerable danger to the crew.

ORDER MARSUPIALIA.

The Fourth Order of the Class Mammalia, is called Marsupialia (from marsupium, a purse or pouch), and includes those animals which are furnished with abdominal pouches, wherein to suckle and protect their young. The Animals of this order, are confined to America, Australia, and some of the East Indian Islands, and are divided into several tribes, which, though all agree in having the pouch, differ materially from each other, some being carnivorous and insectivorous, while others are entirely herbivorous ; some nocturnal, others diurnal. This order includes the Opossum, Kangaroo, Kangaroo Rat, Phalangiers, Ornithorynchus, Echidna, and Wombat. The Opossum inhabits America and Australia, where its flesh is eaten by the natives ; it is about the size of a cat generally, and it is so tenacious of life, that it has been often left for dead, and on returning to the spot, has been gone in half an hour's time. The female carries her young on her back, with their tails twined round hers.

The Kangaroos are confined to New Holland and Van Dieman's Land, and may be readily known by the shortness of the fore legs compared with the hinder legs, and also by the great size and thickness of the tail. Their usual attitude is upright, but they can run on all-fours ; their swiftest motion however, is by springing in an upright position, assisted by the strength of the hind legs and the muscular tail. Their flesh is considered good, by the settlers of Australia, and the animal is hunted with dogs, as the fox in this country ; they often destroy the dogs when near water, by holding them under, in their short fore legs, till suffocation ensues. Though formerly numerous, they are now rarely seen, except in the dense forests of the interior, which are seldom trodden by the foot of man. The young Kangaroo is very small when born, and is suckled in its mother's pouch about eight months before it is



quite able to take care of itself. The Kangaroo is entirely herbivorous, and sometimes ruminates.

The Kangaroo Rat, likewise a native of New Holland, resembles the Great Kangaroo in form, but is much smaller, not being much larger than a Rabbit. It is timid and harmless, feeding on roots and vegetables, and may be easily caught in traps, baited with potatoe, of which it is fond.

The Phalanger somewhat resembles the fox, in the shape of its body, but the tail is prehensile and not bushy, it lives on fruits, vegetables, and insects, is nocturnal, and resides constantly on trees, hiding itself during the day beneath the foliage. One of this tribe, the Flying Phalanger, is a graceful animal, having a broad expansion of the skin, on each side of the body, by means of which it is enabled to take long flying leaps from tree to tree. They are nocturnal, lying concealed during the day in hollow trees; they are gregarious, and feed on fruit, leaves, and insects. The Squirrel *Petaurus*, or Flying Phalanger, is about eight inches in length, of a grey color; the fur is soft and delicate, the eyes rather full and large. But perhaps the most curious of the Marsupial animals, is the *Ornithorynchus* or Duckbilled Platypus. This animal possesses a properly developed duck's bill, attached to its head, resembling in other respects, many hairy quadrupeds. The male has also a spur on the hind leg, like that of the common fowl. It inhabits the ponds and rivers of Australia, feeding on insects and mollusca, which its bill assists it in finding among the weeds and mud. It burrows for itself a hole, in a bent or serpentine direction. It has also webbed feet, to assist it in swimming, the chief part of its time being spent in the water. Its flesh is eaten by the natives, who have considerable trouble in taking it, as its movements in the water are very rapid. No specimen has yet been brought alive to Europe, though preserved

specimens have, and have been carefully examined by the eminent Naturalist, Professor Owen. The first preserved specimen brought to England, was for some time thought by Dr. Shaw, to be a false animal, made up to deceive those who interested themselves in Natural History.

Another curious animal of this order, is the Echidna, or Porcupine Anteater of Australia and Van Dieman's Land. It is entirely destitute of teeth; the body is stout, the legs short and thick; the hind legs, like those of the Platypus are turned backwards; it has no outward ears, the body is covered with a thick mass of sharp spines on its upper part, which are usually laid nearly flat, though the animal has the power of raising them at will, and also of rolling itself up like the hedgehog, in a ball, being surrounded with its sharp prickly spines. It is a burrowing animal, and nocturnal, feeding on ants, which it takes with its long tongue, which is covered with a slimy substance. The natives eat the flesh of the Echidna. It is easily tamed, and it is supposed with a little care, might be brought alive to England. Lieutenant Brereton, kept one a considerable time, and it lived during part of the voyage to England, but died suddenly.

ORDER RODENTIA.

The Fifth Order of the Class Mammalia, is called Rodentia; (from *rodo*, to gnaw,) and includes a great variety of different animals; among others, the Squirrel, Marmot, Dormouse, Jerboa, Rats, Mice, Hamster, Beaver, Porcupine, Coypu Rat, Chinchilla, Agouti, Cavy, Hare, and Rabbit. These are all distinguished by the presence of four large incisors in front, and the absence of canines, there being a space between the incisors and grinders. They have no sideways motion of the jaws, only up and down. The teeth in front

grow rapidly ; they are furnished with a very hard coating of enamel on the outside, and the teeth wearing down behind, leaves a sharp edge of enamel ; these incisors are formed from a soft kind of pulp, the root being perfectly soft, and if one be lost, the opposite tooth, for want of another to wear it down, will grow to a great length, and cause the animal great inconvenience, if not death.

The Squirrel family is one of the most graceful and numerous of this order, being found in all parts of the world, except Australia. The Squirrel is provided with a fully developed clavicle or collar bone, and is thereby enabled to use the forefeet as hands ; the hands being also furnished with a small thumb. In feeding they sit upright on the haunches, with the elegant bushy tail upright against the back, and holding their food in their forefeet or hands while they eat it. They have often a tuft of hair on the tip of the ear. The claws are sharp, to assist them in climbing, which they do with remarkable activity, the tree being their proper place. The squirrel is usually a fruiteater, but is also said to devour young birds and insects. The American Squirrels formerly did so much damage to the corn, &c. that in Pennsylvania, in the year 1749, the enormous sum of £8000, was paid to persons for destroying them, at three-pence per head, consequently 640,000, were destroyed.

The Marmot is about the size of a rabbit, and is a native of the Alps, and North America. It is a burrowing animal, feeding on roots, and vegetables, and lies dormant or torpid during the winter season. They are caught and eaten by the natives of the Alpine countries, and just before their time for sleeping in winter arrives, they are fat and very good eating.

The Dormouse like the Marmot lies torpid during the winter. It is a pretty little animal, found in hedge-rows and woods ; feeds on nuts and fruits, and resembles

the Squirrel in its general habits, sitting on its haunches, and holding its food with its paws. They make their nests in form of a round ball, with a hole at the side for admission, and suspend them from a bush or branch of a tree. The Dormouse is common in England, and other parts of Europe.

The Jerboas resembles the Kangaroo, in the comparative proportions of their limbs, the fore-legs being much shorter than the hind-legs; they have no pouch however, like the Kangaroo. They are natives of Africa and Asia, chiefly, abounding in Egypt and Arabia. They have a jumping movement, and are very active; they are timid, and lively during the summer, and live in burrows under the sand; it is about the size, in Egypt and Arabia, of a large rat, feeds on roots bulbs, sitting on the haunchs to eat, like the squirrel. The Jerboa of Siberia, is much larger than that of Africa; it feeds on animals as small as birds, insects, as well as vegetable substances. It is hunted by the Tartars, mounted on swift horses, who value the flesh as food, being better flavoured than that of Egypt. Another species of Jerboa, is the Cape Leaping Hare, of Africa, very much resembling the Kangaroo, both in form and in habits; it is the largest of the Jerboa tribe. It is nocturnal and gregarious, and feeds entirely on vegetable substances, forming burrows under the sand, in which many of them reside together. It is about the size of our hare.

The Rat tribe belongs to this order, and includes the Common Mouse. Their habits are too well known to need description. The Common Rat was introduced from Norway into England, according to some writers, but others assert that the Rat was brought from India or Persia. Wherever man is to be found, there we may look for the rat; as they will pass from one country to another in ships, which are often pestered with them; the usual mode of destroying them is to burn

sulphur, closing up the hatchways and portholes, so as to suffocate them. The Rat formerly most common in Britain, was the black rat, a smaller and less ferocious species ; but this has been almost exterminated, by the common rat. The various kinds of Mice are much alike in habits, timid and tender. They, as well as Rats, are nocturnal and omnivorous, and burrow holes through the strongest walls and partitions, to get at repositories of food or granaries of corn.

Another animal of this order deserving notice is the Hamster, fortunately, for the agriculturist, not found in England, but inhabiting Russia, Poland, and the North of Germany. They are about the size of a large rat, and are furnished with great cheekpouches, in which they carry food to their burrows. They feed on beans, corn, roots, and nearly every kind of vegetable ; and are also carnivorous, feeding on mice, reptiles, and insects ; they are usually solitary, seldom being found together, and usually when two Hamsters meet, if the pouches are empty, they attack each other, and fight till one is killed, when the survivor eats him ; when the pouches are full, they are easily taken. If hunted by dogs they do not generally attempt to escape, but laying hold of the dogs with their teeth if possible, they hang to them till they are killed. They lie torpid during the winter, but provide a large quantity of food in their holes, in case they should wake hungry. Upwards of a bushel of seeds have been often found in the burrow of a single Hamster.

The Beaver is a native of North America, North Europe, and some parts of North Asia, though it is generally supposed to exist only in North America. It is noted for its building habits, and is an aquatic or water animal, of about the size of a large dog in length. The body is thick, the limbs short, and the tail large and flat, covered with scales. The Beaver builds houses for itself as well as having holes or burrows

under the banks of rivers ; the houses are built so that the entrance-hole is hidden from sight by the water. In these houses they store their food and lie during the winter. They are hunted for their skins, which are useful for various purposes. Hats were formerly made entirely of Beaver skin. Their teeth are very strong ; they can cut off a thick piece of stick with a single bite. The natives of America eat the flesh of the Beaver, and think it a delicacy. Beavers were once common in this island, and are still found in some parts of France and Germany.

The Porcupine, an animal covered with spines or quills, is found in Europe, Asia, and Africa ; it is common in Italy. It is nocturnal, and feeds on roots, bark, fruits, and vegetables ; it lies torpid during the cold season of the year. When attacked, it bends down its head, presenting a formidable array of spines to its enemy, and the wounds formed or given by them are usually a long time before they are healed. The tongue is rough like that of the cat, the head short, ears small, nostrils large and open, and general form clumsy.

The Coypu Rat is common in South America, being nearly two feet in length ; it is an aquatic animal, feeding chiefly on vegetables, and living in burrows in the banks of rivers, a number together. The skins have been for some time an article of commerce, and the flesh is eaten by the natives of South America. It is of a brown color, and the under fur is nearly water-proof.

The Chinchilla is a burrowing animal of South America, and valuable for its fur, which is very thick, soft, and of a fine grey color. It feeds on bulbous and other roots, and vegetables.

The Viscacha and Lagotis are also burrowing animals of South America. The Viscacha is nocturnal, feeding on vegetables, and its hole is usually tenanted during the day by a small white owl ; it has a curious

habit of hoarding things upon the ground round its hole. The *Lagotis* commonly called Cuvier's *Lagotis*, resembles our common rabbit in form, but has a long hairy tail; the eyes are prominent, and the muzzle is furnished with long whiskers. They feed on roots and vegetables. It is said that the hair falls off immediately after death, the skin is consequently not so useful as it otherwise would be, but the fur, which is thicker than the fur of the rabbit, is used by the Peruvians in making hats.

The *Agoutis* are natives of the West Indies, and are remarkable as being the largest native animals found in those islands on their settlement. They were then exceedingly numerous, but have since been nearly exterminated by the planters, whose sugar canes they are particularly fond of. They do not burrow, but hide themselves in hollow trees; they are about the size of rabbits, and are nearly destitute of tails.

The *Cavy* resembles the *Agouti*, but some are rather smaller; in dry soil it is a burrower, but in wet situations hides itself among leaves. The most common animal of this tribe is the common guinea pig, the habits of which are generally known. They feed on roots, insects and small reptiles. The common guinea pig, was originally brought from South America.

The Hare and Rabbit are the last animals of this order which we can notice. They are both natives of England, and their habits are pretty well known. The Hare is herbivorous and does not burrow, sleeping in what is called a "form," which is a small hollow, scratched out; it is timid and extremely swift, but is caught by the greyhound and other dogs, through running in a zig-zag direction instead of a direct line, which the dog usually follows. The formation of the eye in the Hare offers an instance of design, it being formed so full and placed so prominently that the animal can see behind it without turning the head, this of course

assists the poor timid Hare in escaping from its enemies ; its color likewise agrees with that of the earth, in many places where it is found. One species, the Alpine Hare is common in the extreme northern regions of the world, and differs from the common Hare, in being smaller. This animal shows another instance of wise design ; when the season will permit the Hare to procure food on the tops of the mountains, which is during summer, its color is a light grey, but during winter, when it is obliged to descend the mountains, and dwell in more dangerous situations, its color changes to a snowy white, except the tips of the ears, so that the animal can scarcely be distinguished from the snow.

The Rabbit unlike the Hare is a burrower, and produces its young in a burrow, separate from the usual runs, being constructed on purpose, and here we may still trace design ; the Hare produces its young in the open air, and they are covered with fur and can see from the birth, whereas the young Rabbit is born quite naked and perfectly blind. If the Hare were so born, how would it be protected from the cold, or how escape from its numerous enemies ?

ORDER EDENTATA.

The Sixth Order of the Class Mammalia is called Edentata, or Toothless Animals, (from *e*, without, and *dentis*, a tooth). It includes the Sloth, Armadillo, Anteater, Pangolin or Manis, and some animals no longer existing, as the Megatherium and Mylodon.

They are separated into two genera ; viz., leafeaters and insecteaters. The leafeaters are the various kinds of Sloth ; they are natives of America, and inhabit forests, being formed for climbing ; they are furnished with long hooked claws, by means of which they cling to the trunks and branches of trees, while they strip

them of bark and leaves. There is a great difference in the length of the legs, the fore legs being nearly twice the length of the hind ones; the design of this is to enable the animal to reach a bough at a distance, and to reach round the trunk of a tree in climbing. It is also asserted by eminent Naturalists, that the muscles are of such enormous power, that the Sloth can strangle a good-sized dog at arm's length.

The Insectivorous Edentata include the Armadillo, Anteater, and Pangolin or Manis. The Armadillo is found in South America, and feeds on vegetables, roots, frogs, mice, and other reptiles and insects. It is covered with a horny case or shell, in some having twelve bands or ribs, and in others less. Though classed as toothless animals, they have grinders in both jaws, as well as the Sloth, but have no incisors or canines. The Armadillo is a burrowing animal, and nocturnal. It is well known that great numbers of cattle are killed on the plains of South America, merely for their tallow and hides or skins; the carcasses are left on the plain, and when they begin to putrify, their smell attracts the Armadillo, and many other carnivorous animals. In a short time they become very fat on this food, and are much valued by the Indians, who roast them in their shells. The eyes are fixed on the side of the head, the limbs very short, and almost concealed beneath the shell.

The Anteater is entirely destitute of teeth, and procures its food, consisting of ants, by thrusting out its long tongue into the path of the ants; this tongue is covered with a glutinous or sticky substance, and as the ant attempts to run over or near it, it is caught in the gluten; when a number of ants have been thus caught, the tongue is drawn in, and cleared, and thrust out for another supply. The Anteater is a native of America; it differs from the Armadillo, in being covered with a thick, hairy skin, instead of a shell.

The Anteaters do not burrow, but usually produce their young on a nest of leaves, or in a hollow tree. The Great Anteater is said to eat other small animals as well as ants. The Little Anteaters inhabit forests, searching for insects in the cracks of the bark of trees, they have prehensile tails, and often sleep suspended by them.

The Anteaters of America are represented by the Pangolins or Manis's of Afric and India. The Manis is toothless, but unlike the Anteater, is covered with three-cornered plates of horn or shell laid over each other, like the scales of a fish, covering the whole body, and affording the animal a sure defence. It is a burrower, and feeds chiefly on Ants. There are two kinds, the Long-tailed Manis, and the Short-tailed Manis, differing only in size. They are very slow in their motions, the limbs being formed for strength, more than swiftness. The Long-tailed Manis measures about five feet in length from nose to tail, the Short-tailed variety much smaller. The Short-tailed Manis of Africa is very much disliked by the natives of South Africa, who burn all of them, that they can secure, so that in many parts they are very rarely seen. Several specimens have been brought to Europe; some are in the British Museum, in London.

ORDER PACHYDERMATA.

The Seventh Order is called Pachydermata, or Thickskinned animals, (from pachus, thick; and dermus, the skin). It is usually divided into three great sections; viz., Proboscidea or trunked animals; Pachydermata Ordinaria, or common thickskinned animals; and Solipeda or wholefooted animals.

Proboscidea.

The first section includes the Elephant, of which there

are two living species; the Asian or Indian and the African Elephants. They differ from each other in several particulars, and may be easily distinguished. The African Elephant has the skull more flattened than the Indian, the ears are much larger than in the Indian, spreading over the shoulders, and the top of the head in the Indian species is sprinkled with stiff hairs like bristles. The tusks of the African Elephant are likewise much larger than those of the Indian, and the head altogether more massive and heavy in its construction. The neck of the Elephant is short but very strong; and this is necessary to support the great weight of the skull, the bones of which sometimes weigh 300 lbs. The wisdom and benevolent design of the Creator, is here however, as in every other instance, to be in some measure understood, by those who desire to attain the knowledge of such wisdom and design. Though the neck of the Elephant is so short, that it would be almost impossible for the animal to procure food or drink from the ground, yet he is furnished with an instrument which answers every necessary purpose of the kind—the trunk. With this trunk he collects his food, and places it in his mouth, as well as the water he drinks. By means of this trunk he can cool his heated body, by violently blowing cold water through it on himself, and he can tear up trees by the roots, or pick up a straw from the floor, with equal ease. The teeth consist solely of grinders, excepting the tusks, which, fixed only in the upper jaw, are usually called canines.

The Elephant inhabits the forests near rivers and fertile plains, usually choosing those which are well watered, both for their fertility, and to obtain a large supply of water, of which it is very fond. The Indian Elephant is very valuable, both as a beast of burthen, and as a necessary part of the state processions and shows of the native princes, some of whom keep a great

many of them. They are also used in hunting the tiger and other large beasts of prey. The White Elephants are most valued, though they are not common, the usual color being dark grey or brown.

The African Elephant is generally hunted by the Africans, for the ivory of the tusks, and for the flesh, which they eat. The usual mode is for two men to ride on a swift horse, one guiding the horse, and the other carrying a sharp sword; when they have found the Elephant, they ride close up beside it; the man with the sword slips off, and while the hind leg of the animal is stretched in running, he makes a sharp cut at the sinew, which usually divides it, and the animal falls. Our limited space will not allow us to mention the numerous anecdotes of this animal, showing its sagacity as well as its great strength; many however may be found in most Animal Histories.

We must not neglect to mention an extinct species of Elephant, called the Mammoth, the bones and tusks of which are found in great numbers in the extreme north of Asia. Not only are the bones and tusks discovered, but in the year 1799, the body of one was found at the mouth of the Lena, in Siberia, enclosed in a great mass of ice, and the greater part of its skeleton, with some parts of the skin and hair, are now in the Museum of the Academy, at St. Petersburg, the capital of Russia. In this variety the tusks were very much larger than in the common Elephant; they were also curved upwards towards the forehead. Though the time when these animals existed is not known, the tusks are still valued for ivory, the tusks of the Mammoth, furnishing most of the ivory at present worked in Russia.

Ordinaria.

The second section (*Pachydermata Ordinaria*.) includes the Hippopotamus, Rhinoceros, Tapir, and Hog. The Hippopotamus or River Horse is a native

of Africa only, where it is usually found in rivers ; it is nearly as large as the Elephant, though not so tall, the legs being very short. The head is thick, and the mouth armed with enormous tusks or canines, which are nearly hidden by the large lips. The nostrils are large and open on the top of the nose, and the eyes are placed very high on the forehead, so that while the animal is walking at the bottom of the river and requires to breathe, he need only lift above the water, a small portion of the head, when he can both see and breathe. The skin is very thick, being on the back and sides about two inches in depth ; it is naked, and is made into whips, shields, and other articles. The flesh, is valued in some parts of Africa, and the fat between the skin and the flesh is considered a delicacy by the farmers and settlers, at, and near the Cape of Good Hope. The Hippopotamus is gregarious, and feeds on vegetables, chiefly grass, which it usually finds in abundance on the banks of rivers. It is much dreaded near the source of the Nile, where it tramples down the corn, &c. of the natives, who have no means of destroying it. It is usually harmless, but when attacked becomes very furious and dangerous, more especially if attacked in the water. Captain Owen, while examining a branch of the River Temby, in Delagoa Bay, on the south coast of Africa, mentions some encounters with this animal. In one instance, a shock was felt by the parties in the boat, and in another moment, a monstrous Hippopotamus reared himself up in the water, and rushing with open mouth at the boat with one grasp of its tremendous jaws, seized and tore out seven planks from its side ; fortunately they were close to the beach, or the consequences might have been very disastrous. This will show something of its strength, and of his fury when attacked.

The Rhinoceros is a native of Africa and Asia. It is remarkable for the extreme thickness of the skin, in some parts lying in folds. It is also furnished with a

horn, and in some species with two horns on the front of the head. The upper lip is lengthened, so that the animal can hold by it. There are several species; the black Rhinoceros of Africa is furnished with two horns, hard and polished. The Rhinoceros Keitloa has also two horns of an equal length. They are both natives of Africa, feeding on young trees and vegetables, harmless until disturbed or irritated, when their fury is outrageous. They are killed for the skin, which is made into shields, whips, &c., and for the flesh which is eaten by some of the African natives. The senses are generally dull, but the Rhinoceros, is still difficult to be approached, as he is usually accompanied by birds, who perch on his back to pick insects out of his knotty skin. So long as the birds remain quiet, the animal continues so, but should anything alarm them, he is immediately on the alert, and on seeing any movement among the bushes, will rush furiously in that direction, trampling everything beneath his feet. As his sight is not very acute, and he usually shuts his eyes when attacking, he is easily avoided by persons aware of his approach.

The Indian or Asian Rhinoceros is not so fierce in disposition as the African, but resembles it in habits, food, and general appearance. The color of the animal is usually a dusky brown or black, though one species found in Africa is nearly white. The horn of the Rhinoceros has been for ages valued as a drinking cup, it being supposed that poison would be immediately discovered, if poured into one of the cups, by its running over the brim. They were formerly used by the Indian kings, and when mounted with gold or silver, sold for large sums.

Another common thickskinned animal is the Tapir. This animal is found in India and in South America. The fore-part of the body is dark, the hind-quarters nearly white. It may be known by its general resem-

blance to the Hog in shape, but is much larger, and is furnished with a long and sensitive upper lip, slightly approaching in form the trunk of the Elephant. The Tapir is herbivorous, inhabiting dense forests, and delights in water as much, or nearly as much, as the Hippopotamus. The Indian species is larger than the American; they have both extremely thick hides, and can force through the most tangled thickets without much inconvenience. The chief enemy to the American Tapir, is the Jaguar; but when the Jaguar springs on the Tapir, he sometimes rushes through the thickets, and so bruises the Jaguar that he is obliged to let go his hold. The Tapir is frequently domesticated, and becomes very familiar, delighting to be scratched and patted by those who are in the habit of feeding or caressing it.

The last tribe of the common thickskinned section is that of the Hog family, including the Hog, Babiroussa, and Peicary. Of the Hog, sufficient is known, being common in most parts of the civilized world. The Babiroussa resembles the Hog in its appearance and general form; it is however distinguished by the large size of the tusks both in the upper and lower jaw, which are usually curled upwards towards the forehead. It is found in most of the East Indian islands, and its flesh is held in high estimation by the natives.

The Wild Boar is common in some parts of Europe, Asia, and Africa. It is supposed to be the original of our domestic breeds. The Wild Boar was formerly hunted in most parts of Europe, and is still hunted in India. They are dangerous when brought to bay, sometimes ripping up the dogs, and even attacking man.

Solipeda.

The third or solid-footed section of thickskinned animals includes the Horse, Zebra, Ass, Mule, and Quagga. Of these the Horse is the noblest animal,

both for its usefulness and its beauty. There are many varieties from the elephantlike dray Horse to the small Shetland Pony. The most valuable of all is the Arabian Horse, which is remarkable for its beauty. It is not so large as the English Horse, seldom being more than fourteen hands high, while the English varies from fifteen to seventeen. The Arabian Horses are much valued by the Arabs, in many cases forming their only riches, the Arab, (according to the Rev. V. Monro, who travelled in Syria,) speaking thus of a mare with which he had been requested to part, "I love my mare better than my own life; money is of no use to me; when mounted on her, I feel rich as a Pasha." This Arab, though he refused a high price for his mare was without shoes or stockings, his whole dress and accoutrements being worth about seventeen-pence sterling. The Horse is thought by some writers to have been first domesticated by the Egyptians, who are the first people mentioned as having Horses both in sacred and profane history. Some parts of the world abound with wild Horses; South America is in some parts tenanted by numerous herds of them, the descendants of those taken by the Spaniards soon after the discovery of that continent in 1492. Some of the riders having been slain, the Horses escaped and bred in the woods, and have since increased to such numbers, that in some parts they are killed merely for their hides and tallow. Large herds of Wild Horses are likewise found in the eastern and northern parts of Russia but little is known of their habits. The flesh of the Horse is eaten by the Tartars and other wandering tribes.

The Zebra is a native of South Africa, living chiefly in the mountainous parts. It is gregarious and herbivorous, and is killed by the Hottentots, Bushmen, and other Africans, for food. It is beautifully and regularly striped from the head down even to the hoofs, the stripes being usually black, on a light ground. The disposi-

tion of the Zebra is wild, savage, and untractable, seldom being so tamed as to become of much use to man. The Zebra of the Cape, called *Dauw* by the natives is sometimes seen during a season of draught, when the upper-springs are dried up, to descend with other animals, in immense multitudes to the cultivated lands. They are often shot by the Bushmen, with their poisoned arrows, who follow them till they fall. The *Dauw* is not, like the mountain Zebra, marked or striped on the legs, and under parts of the body.

Another animal much resembling the Zebra is the Quagga of South Africa, differing from it however, in having the hinder-parts without any stripes, being of a plain grey color. Its habits and disposition are those of the Zebras.

We have now to notice an unjustly despised and cruelly used animal, viz., the Ass. This Animal which is found in most parts of Europe, Asia, and Africa, is an evident proof of the effects caused by brutal and inhuman treatment. The Ass of Arabia and Persia, is not only a swift animal, but also one of remarkable beauty; much care being taken to preserve and to improve them; the coat is smooth and fine, and the limbs well formed, a striking contrast to the ill-treated, half-starved, English Donkey. Wild Asses are common in many parts of Asia and Africa, and their flesh is eaten by the Tartars, Arabs, and Persians.

The Mule is half-horse and half-ass, and unites in some measure the qualities of both. They are very strong and in mountainous countries valued for their surefootedness in travelling, passing over the steepest and most dangerous mountain paths, and along the edges of precipices with perfect safety. The Mule is much used in Spain, by carriers, who pass with their loaded Mules from one province to another. It is also highly valued in South America, and on the Andes is almost the only useful domestic beast of draught or

burthen. The head and fore-parts of the Mule usually resemble the Ass, but the hinder-parts resemble the Horse.

ORDER RUMINANTIA.

The eighth order of the Class Mammalia, is called Ruminantia, or Cudchewers, (from rumen, the cud,) and includes the greater number of those animals which are of the greatest use to man, for food, labor, and clothing. With few exceptions, every country and climate has its cudchewing animal, from the Llama of South America, and the Springbok of South Africa; to the Reindeer and Musk Ox of the Arctic Regions. All the animals of most importance to man, have been tamed from among some of the Genera in this order; while alive they will carry his burthens, and supply him with milk, butter, and cheese; and when dead, their flesh is good for food, and their skins and wool furnish him with the most valued articles of clothing. Some of them (as the Reindeer), form the only riches of the natives of the countries where they are found. All this Order are herbivorous, and are furnished with four stomachs, or rather with a large stomach divided into four compartments; they ruminate, that is, the food, after having been swallowed, is, by means of muscles peculiar to Ruminants, forced into the mouth, and chewed over again, after which it passes into the third, and thence into the fourth stomachs. The hoofs are divided, and in many are concave beneath. The intestines are very long, vegetable food requiring to be kept longer in the body, than animal food. They are all, with the exception of the Camel and Llama, destitute of incisors in the upper jaw, being supplied with a hard pad in front of the upper jaw. They are divided into two sections, Hornless and Horned.

The first or Hornless section includes the Camel,

Llama, and the Musk Deer. The Camel is usually found in desert climes, where the soil is sandy, and the vegetation poor, therefore the benevolent wisdom of the Creator has furnished it with incisors in the upper jaw, and with the power of existing for a long time without a fresh supply of water, and of enduring a great degree of thirst. The foot is likewise formed for travelling over soft, sandy soils, being large and soft, so as to spread out wide when pressed upon, and prevent the foot from sinking into the sand, which would hinder its progress. It is capable of enduring great fatigue, and can carry heavy burdens, weighing from 500 to 600 pounds; it is therefore invaluable to the merchant, who crosses the desert with his merchandize, and to the Arab, whose home is the desert. There are two species, the Bactrian and the Arabian.

The Bactrian differs from the Arabian in having two large humps on the back; it is stouter and more capable of endurance, though not so swift as the Arabian Camel. The Bactrian Camel is found in most parts of central Asia, and is said to exist in a wild state on the frontiers of China.

The Arabian Camel is found in most parts of North Africa, Arabia, Syria, and Persia. Its habits and dispositions are like those of the Bactrian, docile, obedient, and enduring. The Dromedary is a light variety of this species, and is used principally in journeys requiring great speed and dispatch. The Camel supplies the Arab with milk, and enables him to move rapidly from place to place, and into the centre of deserts, where he is far beyond the reach of the horse, whose powers of enduring hunger and thirst would not enable him to travel into regions where neither would be properly satisfied.

The Llama of South America, resembles the Camel in its general form, disposition, and habits, but is without humps. Like the Camel too it has incisors in the

upper jaw, as it lives in dry countries where the vegetation is often poor. The form of the foot differs from that of the Camel, being divided into two horny hoofs, nearly pointed, and this assists it in climbing the mountainous districts it inhabits. The Llama was the only beast of burden in the possession of the Americans, when the Spaniards invaded Peru and Chili. It is still used for many purposes, being strong and hardy ; it will carry from 80 to 100 lbs., over the most rugged and dangerous mountain paths, but will lie down when much fatigued. The wool is very fine, and is much valued by the natives, by whom it is manufactured into various articles of dress. The flesh is also eaten and is considered excellent. The wild Llama is called Guanaco.

The Musk Deer is a native of Asia, and is known by the absence of horns, and by the length and size of the canines of the upper jaw, which project two inches below the opening of the mouth. It is valued for the musk which it affords (hence its name ;) and its flesh is eaten by the natives of India and Thibet, who esteem it highly. There are three or four varieties ; the largest is the common Musk Deer, which is the size of a small Fallow Deer ; the others vary in size, the smallest being very little larger than a common Hare. They are covered with a very close warm coat, and inhabit mountainous forests chiefly ; the color is usually dark brown, but some of them vary. They are very timid, and extremely active, jumping great distances from rock to rock, and are seldom seen on the plains. The Male only produces the article called musk.

Horned Ruminants.

The Horned Section of this Order, includes the Giraffe, Deer, Antelope, Oxen, Goat, and Sheep.

The Giraffe is a native of Africa, and is remarkable for its great height, a horse being able to pass under

its belly. It is of a light brown or buff color, and has short straight horns. The neck is of great length, and the body is spotted with dark spots, from which it is called Camelopard. The tongue is very long and narrow, and capable of being lengthened, and by means of this, the Giraffe lays hold of the small branches of the trees on which it feeds, and draws them into its mouth. The eyes are large and bright, and are fixed on the sides of the head, so that the Giraffe can see behind it. When first mentioned in Europe by Le Vaillant, it was thought to be a fabled animal, until specimens were sent to some of the learned societies, also a live one to his late Majesty George IV, by the Pasha of Egypt, in 1827. Since that time many have been brought over alive, and some have been born, and are now living, in the Zoological Gardens, London. The height of the Giraffe to the top of the head, is, in the male, fifteen or sixteen feet, in the female only thirteen or fourteen. In the plains of South Africa it is numerous and is hunted by the natives for its flesh, which is good eating. It is also preyed on by the Lion, with whom however, it often fights desperate battles, using its hind feet, which are very powerful, and striking rapidly. The Lion often springs upon them when they come to drink at the pools, and hangs on them, tearing the flesh, till they sink from exhaustion, and are devoured at his leisure. It does not feed from the ground, but from the tops of trees, especially the mimosa tree, of the small branches of which it is very fond. When obliged to put its head near the ground, it does so by straddling the fore-legs, in which position it has a very awkward appearance.

The animals of the Deer tribe are found in almost every country, and vary according to the climate and situation, in their habits and appearance. Those of cold countries are stoutly made, and covered with a thick warm coat; while those of hot climates are slen-

derly built, and have very short and light coats. Through all the Deer tribes, the males are furnished with horns, which are cast off every year, fresh ones growing very rapidly. Among the Deer tribes, the different species are, the Reindeer, Elk, Stag, Fallow Deer, Roe Buck, Muntjak, and Red Deer. In all the Deer tribes the horns are solid, and are generally useful to form handles to knives and other instruments.

The Reindeer, found in the Arctic regions of Asia, Europe, and America, deserves especial notice, on account of its usefulness to the inhabitants of the countries where it is found. Both the male and female have horns, and the feet are so much divided that when pressed on the ground they widen so as to hinder the animal from sinking into the snow. The Reindeer is migratory, and gregarious, going in herds from one part to another, according to the season. Their principal food is the lichen or moss, which they procure during the winter, in the forests of the lower countries, but as summer approaches, they ascend the mountains, to procure their food, and to get beyond the reach of various insects, as the Gadfly and Mosquito. To the Laplander, the Reindeer is all things, its milk is made into cheese, and the animal draws its master in his sledge over the snow and ice; when the Reindeer is dead, his flesh supplies food, his skin clothing and tents, and his sinews being divided, are used for thread, which is very strong. Some of the richer Laplanders possess from 500 to 800 of these animals, which enables him to live very comfortably when he can get plenty of food for them; the severity of the weather sometimes covers and freezes up all the moss, when great numbers of these useful animals die. They root among the snow to procure the moss, as a pig would for acorns.

The Elk is the largest of the Deer tribe, and is like the Reindeer, found only in the extreme northern regions of the world. It is known by its immense horns.

It is thickly covered with long hair, and the skins are very thick ; a regiment of Swedish soldiers had waist-coats of them, and a musket ball would scarcely pierce them. The flesh is excellent, and it is hunted on snow skates. When passing through thickets it raises the head, and throws the horns on the shoulders. It feeds on young twigs and branches during the winter, and in summer is fond of the water, being a good swimmer. The American Elk or Moosedeer, may be distinguished from the European Elk, by the shortness of its coat, it is more wild and difficult to be taken, but when taken young is easily domesticated. Its flesh and skin are both valued, the skin when dressed, forming a soft pliant leather.

The Fallow Deer is well known in England, being the kind so common on many of the large estates of noblemen and gentlemen. Its appearance and habits being well known, do not require notice.

The Stag or Red Deer found in most parts of Europe is much larger than the Fallow Deer. It was formerly common in all the forests of England, but is now found wild only in the north of Scotland. In the forest of Athol, and other parts of the highlands they are sometimes seen in herds of a thousand each. The chase of this animal, was formerly a business of great importance, all the tenants being summoned to assist in driving them with hound and horn. They are usually timorous like other Deer, but when brought to bay, they are dangerous, sometimes rushing on the person nearest to them.

The Wapiti or American Red Deer, somewhat resembles our Red Deer, but the horns grow to an enormous size, and the male is often dangerous to approach. Its body and limbs are very stout, and the coat thick.

The Indian or Axis Deer, agrees with our Fallow Deer ; it is abundant in India, and will breed readily

in this climate, many of them at present existing in this country. It is of a light brown color; the body is beautifully spotted with white, having also a black stripe down the back.

The Common Roebuck is smaller than any other European Deer, and is common on the Continent. It is seldom found on this island, except in the north. Unlike most other Deer, it is solitary, seldom more than the male, female, and fawn being found together. The horns are rather short; the summer coat reddish on the back, and white on the under parts. The color changes slightly in winter. The face is always black.

The next section of this order is that of the Antelopes, which differ from the Deer tribes, in having hollow horns, the horns of true Deer being solid. This section includes the Gazelle, Springbuck and other Bucks of South Africa, Chamois, Nyghau, Gnu, and many others.

The Gazelle is a very beautiful Antelope, found in Arabia and Syria, and so swift that it can seldom be overtaken on the fleetest horses, or by the greyhound alone; the Arabs, in consequence, use a falcon, which they fly at the Gazelle at the time the dog is coursing it. The Falcon strikes at the head and eyes of the animal, and so distracts its attention, that it is soon caught by the Greyhound. It is small and exceedingly shy, but is easily tamed when young. The Arabs and Syrians eat the flesh, and make the skins into parchment, which they use to cover their drums with. Its color is light brown, or a fawn color, white under parts, and a black band on each side of the body.

The Springbuck, Blessbuck, Reedbuck, and Kleinbok, are all natives of South Africa, being numerous near the Cape of Good Hope, and resembling each other closely in their habits and dispositions.

The Springbuck or Springbok derives its name from the great height to which it often leaps on a sudden.

It is gregarious, the plains of Africa being sometimes literally covered with them. They are eaten by the farmers, settlers, and Hottentots at the Cape, and shot in great numbers. The sport is carried on in day time, when the animal is lying asleep among the bushes; the hunter is accompanied by a large hound called a Buck-dog, so that if the Antelope be merely wounded, the dog will follow and secure it. Its general color is light cinnamon red, the under parts a pure white, with a dark band on each side. It is easily tamed, when taken young.

The Chamois is a native of the Alps, Pyrenees, and other mountains of Europe and Asia, being commonly found on the higher parts of those mountains. Its chase gives employment to many of the natives of Switzerland. The occupation is very dangerous, as the Chamois leaps the widest chasms, and ascends and descends the most perpendicular rocks, whither the hunter must follow it to be successful. There are many who, notwithstanding the danger, cannot be hindered from following this employment, and many lives are lost. Its flesh is good, and the skins are soft and useful when dressed. Its food consists of herbs and mountain flowers; it seldom drinks, but is said to be fond of salt, many stones having been found almost hollow, by the continual licking of the Chamois, to get the saltpetre they contain. In this respect they resemble many of the deer tribe of America.

The Nylghau ranks among the largest Antelopes. It is a native of India, where it abounds in the dense forests. It is solitary, seldom more than a pair being seen together. It is fierce and untractable, and will often turn upon its pursuers, when its horns become dangerous weapons. It often becomes however, the prey of the Tiger. Its color is a slaty blue, the horns are short, straight, and pointed, and it has small rings of white round the legs, just above the fetlock and the foot.

The Gnu, of South Africa, is next in size to the Nylghau. It is gregarious, and its flesh is prized by the natives and colonists. Its horns are large and curve upwards; its neck is covered with a large mane, and when the animal is enraged, its appearance is striking. It does not often attack man, but when hard pressed will sometimes do so, dropping on its knees, and darting furiously at its pursuer. The general color is nearly black, the mane almost white, and the tail grey. Its speed is great, and it moves in single file, and not in masses, like many others.

The Goat tribe, like that of the Deer, is spread over a large portion of the habitable globe, and consists of the Common Goat, the Cashmir, Syrian, and Armenian Goats, the Ibex, and some others. These animals are valuable in their respective situations, for food, and their hair for clothing, and the finer sort for making shawls. In Syria the Goat supplies the place of the cow, being driven into the towns in herds, and milked before the doors of the customers. The Goats which supply hair for Cashmir shawls, inhabit Thibet; the wool, when combed off their backs, is sent to Cashmir, whence the name of the shawls. The high price of the shawls does not arise from the scarcity of the hair, but from the great duty paid on them in their passage to Europe. Goats are usually very hardy, their natural locality being in mountainous regions. They feed on vegetables.

The Ibex is common in Asia, and is remarkable for the length and thickness of its horns.

The Sheep tribe are scattered over most parts of the globe, and their habits and dispositions are well known. There are numerous varieties, the most remarkable of which are the Argale, the Mouflon of Corsica, and the Greek Isands, the Fat-tailed Sheep of Syria and Egypt, and the Merino Sheep.

The Syrian Sheep has a very large tail, entirely

composed of soft, oily fat, sometimes weighing as much as 60 or 70lbs. It was to this variety our Lord referred, when speaking of the sheep knowing the shepherd and following him, as the Syrian sheep are so tame as to come when called by name, and will follow the shepherd.

The Merino breed is noted for the fineness of its wool, and is found in Spain, in which country there are ten millions. In going from place to place, the Merino Sheep follow the shepherd. England possesses some fine breeds of Sheep, which are usually divided into three sections: the shortwooled, middlewooled, and the longwooled breeds. These are all tolerably well known, as far as our province allows us to go; we, therefore, pass on to the next tribe.

The Ox is ranked among the animals most useful to man. It is generally distributed through most parts of the habitable globe, and includes the Common Ox, American Bison, Indian Ox or Zebu, and the Buffalo.

The Common Ox is well known, being as abundant as it is valuable, in this country. Besides the various uses and products while alive, as milk, butter, and cheese, all parts of this animal are very useful after death; the flesh is excellent food, the skin is useful for making leather, the horns for lanterns, and other semi-transparent substances, and from the feet a very useful kind of oil called neat's-foot oil, is procured. Great numbers of these animals are found in America, in a wild state, having been introduced by the Spaniards, and escaping into the forests have bred, and are now killed merely for the sake of their hides and tallow. A very beautiful wild variety called the Chillingham Cattle, exists in this country, in the Park of the Earl of Tankerville. They are of a white color, with black muzzles, and are fierce and often dangerous to approach.

Besides furnishing milk, &c., the Ox is useful in many countries, as a beast of draught and burden.

In Spain, Egypt, and many other countries, the Ox is driven in the plough, where its strength and steadiness make it valuable. In Africa it draws the waggons of the farmers, travellers, and natives, and is also used by the Caffres, Hottentots, and other natives to ride on. It is guided by a piece of wood placed in a hole, which is cut through the upper lip between the nostrils, to the ends of which, thongs of leather are tied, and serve for reins. In Spain the Bull is used to make sport for the people, by being baited in a ring or circus. The Bull being admitted into the circus, is irritated almost to madness, by men called matadores, who flourish red flags on poles before the animal, and after having shewn various feats of activity in escaping from him, one of them concludes the performance by stabbing him between the horns, which causes death.

The Bison is a native of America, and may be known by its immense mane and beard, the animal seeming to be all head and shoulders. It abounds in the vast plains of America, called prairies, and forms the chief food of the Indians. Their manner of taking the Bison in large numbers deserves notice; a number of Indians having discovered a herd of Bisons, drive them by shoutings and various noises, towards one of the numerous precipices, having previously placed one of their number in a Bison skin, as a decoy, and while running in masses towards the precipice, those in front are pressed on by those behind, and there being no means of escape, great numbers of them fall over and are killed. They are cut up and salted by the Indians for winter provisions, the tongue and hump being considered the most delicious morsels. The chief enemy of the Bison, next to man, is the Grisly Bear. The Bison is fond of licking those places which are common in America, called saltlicks, and there great numbers of them are killed by the hunter.

The Buffalo of South Africa is a large animal, and

exceedingly fierce, sometimes defending itself successfully, against even the Lion. It is much sought after on account of the excellence of its flesh, but is a dangerous animal to encounter, when wounded or enraged.

The Aurochs or Zubr much resembles the Bison, and is found in the northern forests of Poland. It is fierce, and does not fear the attack of the wolf, nor even of the Bear. It was formerly much more numerous than now, but great numbers have been killed off, and few remain.

The Zebu or Indian Ox is very numerous in Hindostan, China, and the Indian islands, and may be known by its rounded hump, slightly inclined backwards to the head. It is much more active than the common Ox, and is used in some parts of India, as a saddle-ox. The finer individuals are kept for special occasions, and are used by the native princes to draw their carriages; their horns are frequently gilded, and their harness richly ornamented.

The Brahmin Bull is a species of Zebu. It is usually turned out while very young, to wander wherever it pleases; and as it is an offering to the Hindoo Idol, Siva, it is held sacred by the natives, and it is considered a mortal sin to strike or in any way injure it. They often become very bold, and extremely annoying to Europeans. They break into gardens, and rice fields, and take liberties with the fruit on the stalls; and often when refused what they require, will give a push with their horns. Alas! that while the Bull of Bramah is thus treated, the poor working Ox is often harshly and severely treated. The color of this Bull is white, that being the favorite color.

The Musk Ox is a native of North America in its Arctic regions. It is not very tall, being less than the common Ox, but it is covered with a very thick coat of long woolly hair, to preserve it from the extreme cold. Its flesh is eaten by the Esquimaux, but at certain seasons

of the year, gives out a very strong flavour of musk, whence its name.

ORDER CETACEA.

The Ninth and last Order of the Class Mammalia, is called Cetacea or Whale-like animals, (from *cetus*, a whale.) They are all aquatic or water animals, and are known by the orifice on the top of the head called the blowhole. Their form resembles the form of the fish; the body is covered with a smooth naked skin, and beneath the skin is a layer of blubber, varying in thickness according to the size of the animal. Most of the Carnivorous Cetacea, feed on Mollusca, soft animals found in great abundance in most seas.

This Order is divided into two sections, Carnivorous, and Herbivorous Cetacea. The first section, contains the Whales, the Dolphin, Porpoise, Narwhal, and the Grampus. Of these the largest are the Whales. They are found in most of the larger seas, but abound in the Arctic and Antarctic Seas. The most useful of these are destitute of teeth, being supplied with perpendicular flakes of horn in the upper jaws; these flakes having at the lower edge, a kind of network, through which the animal strains the water, thereby separating it from the Mollusca. The water when thus separated is expelled through the orifice of the head, and the mollusca are kept in the mouth. These horny plates are called whalebone or *balena*. The gullet is so small, that even a small fish cannot pass down it.

The largest are the Rorqual, and the Greenland or Whalebone Whale. They are most useful both for the oil and whalebone, and are taken by means of an ironheaded dart, called a harpoon, at the end of which is fixed a cord, which is also attached to a boat. When the Whale is struck it usually dives under water to a great depth; the whaler watches for its rising to breathe,

when another harpoon is thrown at it, and after some time it again rises to the surface exhausted with loss of blood, and the men surround and pierce it with spears which soon causes its death. The usual sign of the approach of death, is the red color of the water blown from the blowhole, which is caused by its being mixed with blood.

The Cachalot or Spermaceti Whale is not so large as the Rorqual or Greenland Whale, but is more fierce in its disposition. It differs from the Common Whale in having sharp teeth round the surface of the jaws; it affords a valuable oil, but the capture of it is dangerous, as it will attack boats, and even ships, with such fury, as to burst in the sides, and sink them. This animal may be known by the squared figure of its head; it affords no whalebone, the teeth being in place of it; it feeds on seals and large fish. They are more common in the Southern than in the Northern Seas, but some have been taken on our own coasts. In the year 1819, a Cachalot, 63 feet in length was killed in Whitstable Bay, on the coast of Kent. The Cachalot furnishes the fat substance called Spermaceti, and also Ambergris. The Spermaceti is taken from its head; the Ambergris is supposed to form in the inside of the Cachalot, while laboring under some disease.

The Narwhal or Sea Unicorn is one of the most remarkable of the cetaceous tribes. It grows to the length of from twenty to thirty feet, and is readily distinguished by the large horn on the muzzle. This horn is from five to seven feet in length, and in substance resembles the tusk of the Elephant, being also hollow at the base and solid at the tip. It is spirally marked as though it were twisted, like a rope. This tusk is present only in the male, and is used as a weapon of defence, some having been found pierced through the planks, in the sides of ships. The head of the Narwhal

is blunt ; the eyes are placed in a line with the mouth about a foot behind it. It is a gregarious animal, and is eagerly sought after by the Greenlander, for its flesh and oil. The usual mode of taking it, is by a spear, with a line attached, and the flesh is eaten dried in the smoke, as well as fresh. Its usual color is a yellowish white, with dark spots all over the body. It inhabits the Arctic Seas ; but some have been taken on our own coasts.

The Porpoise is a well known cetaceous animal, being found on all our coasts, frequenting bays and the mouths of rivers. It is exceedingly voracious, and at the time of the herring and mackerel shoals, consumes a great number of them. The Porpoise is well supplied with sharp teeth, which lock into each other, and hold tight. In former days its flesh was eaten by our forefathers, but is now deservedly given up, on account of its strong, fishy flavor.

The Dolphin in shape resembles the Porpoise, but the snout is more lengthened and is sharper. The Dolphin is found in warm seas, and is a great pest to the pretty little flying fish, which it devours in great numbers. The Dolphin, like the Porpoise is fond of sporting round ships, and from the various colors displayed or reflected from its coat in the sun's rays, many fables have been derived.

The Herbivorous Cetacea includes only the Dugong and the Manati or Lamantin. The Dugong is a native of the Indian seas, dwelling in the shallower parts, for the sake of procuring seaweed and marine vegetables on which it feeds. It is gregarious, and is highly esteemed as an article of food, by the Malays, and other East Indians. Its length is about seven feet ; the upper lip which is large and bristly, overhangs the lower, and the mouth is armed with short incisors. Its color is nearly black. The Dugongs are said to possess *great affection* for each other ; if one of a pair be killed,

the survivor will follow the boat containing its dead partner, and often shares its fate. A species of Dugong has been discovered in the Red Sea.

The Manati or Lamantin is found on the coasts of America, inhabiting chiefly the mouths of rivers, and feeding on marine vegetables, as seaweed, &c. The Manati derives its name from manus the hand, as the flippers or fins show a slight development of nails, the bones also resembling the bones of a hand. By the assistance of the flippers, this animal drags its body on the banks of the rivers it inhabits to bask in the sun, and to seek for vegetables. It grows to the length of eight feet. Both the Dugong and Manati, resemble the Porpoise considerably in their external appearance. As these animals however show some points of difference from the other cetaceous animals, they have been separated by some modern naturalists, and formed into a distinct tribe, called Aquatic Pachydermata, or Water Thick-skinned Animals.

A TABULAR VIEW OF CLASS AVES.

ORDER.		SECTION.		EXAMPLE.	
Accipitres, or Plunderers		Diurnal.....	Nocturnal.....	Eagle, Vulture, Hawk. Owl.	
Passeres, or Sparrow-like Birds		Dentirostres Fisirostres .. Conirostres .. Tenuirostres Syndactyli ..		Butcher-bird, Thrush, Blackbird, &c. Fem, Owl, Swallow. Crows, Fiches, Bird of Paradise, &c. Hoopoe, Humming-bird, Tree-creeper. Kingfishers, Bee-eater.	
Scansores, or Climbers				Toucan, Parrot, Trogon, Woodpecker, Cuckoo.	
Galline, or Fowl-like Birds ...				Curassow, Turkey, Pheasant, Fowl. Pigeon, Peafowl, &c.	
Cunores, or Runners		Brevipennes.. Presirostres		Ostrich, Emu, Rheu, Cassowary. Plovers, Dottrell, Bustard.	
Grallae, or Waders.....		Culirostres .. Longirostres .. Macroductyli		Stork, Heron, Crane. Ibis, Curlew, Ruft, Snipe, Woodcock, &c. Flamingo, Rail, Coot, Moorhen, &c.	
Palmipedes, or Web-footed Birds		Brachyptera.. Longipennes.. Totipalmate.. Lamellirostri		Auk, Puffin, Penguin, Diver. Albatross, Gull, Petrel, Cormorant. Pelican, Darter, Tropic Birds. Swan, Goose, Duck, Merganser.	

CLASS AVES.

The Second Class of the Vertebrate or Backboned Animals is called Aves, (from avis, a bird.) It includes birds, which are warm-blooded, like Mammalia, but oviparous, that is, their young are produced from eggs. The large bones of birds, are hollow, and instead of being filled with marrow, are filled with air, which makes them lighter than they would otherwise be, and assists them in flying. The general form of birds is also favourable to their rapid motion through the air, being somewhat like the keel of a boat. Birds have four limbs as well as quadrupeds, but the anterior or front pair of limbs are especially adapted, (with a few exceptions) for flying, being covered with feathers, and strengthened by powerful muscles; the tail acts like a rudder, during the bird's passage through the air. The eye of birds differs from that of most other animals, in being furnished with a nictitating or winking membrane, which is frequently drawn over the eye with rapidity, and serves both to protect it, and to keep it clean; the eye is formed so as to enable the bird to see a great distance, the cornea being very much rounded, and other parts of the eye in conformity with it. The dispositions of birds are various, according to their habits, some, being birds of prey, are fierce and violent, while others are timid and gentle. The structure of the stomach and intestines varies according to the food of the birds. Those which live on flesh, have simple stomachs and short intestines; those which feed on grain and other hard food, have a gizzard as well as stomach, and longer intestines. The gizzard is composed of four very powerful muscles, and is lined with


a very hard skin. These hard sides of the gizzard grind the food that comes between them, reducing it to a soft pulpy state; the action is likewise assisted in many birds by small pebbles, which they swallow. The lungs of birds are fixed to the upper parts of the ribs, instead of hanging free, like those of the Mammalia. Birds have no teeth, but many of them are furnished with notches in the bill and a hook at its end, which are of the same use to them that teeth would be.

The Class Aves is usually divided into six orders, but as the fifth order includes animals which do not agree well in some respects, we shall divide them into seven orders, which are named as follows, Accipitres or Raptores, Birds of Prey; Passeres or Sparrow-like Birds; Scansores or Climbers; Gallinæ or Fowl-like Birds; Cursores, or Runners; Grallæ, stilted Birds or Waders; and Palmipedes or Webfooted Birds.

ORDER ACCIPITRES.

The Order Accipitres or Raptores, are birds of prey; their habits may be known by the form of the beak and talons. The beak or bill is strong; the upper mandible is longest, and is furnished with a sharp hook at the end and notches. The talons are strong and armed with sharp, hooked, claws. This Order is divided into two sections, Diurnal, and Nocturnal Birds. The first section includes, Eagles, Hawks, and Vultures. The Nocturnal section includes the Owl tribe.

The Eagle Tribe stands at the head of this Order, for strength and fierceness of character. The Eagle is solitary, and builds its nest on the summit of some rock, almost entirely beyond the reach of man. The color of the body is brown, the top of the head is covered with bright gold colored feathers. It feeds on hares, large birds, and other animals. The Golden Eagle was once common in England, but is now only to be



seen in some parts of Scotland and Ireland. This Eagle is common with most of the Raptorial Birds, has the leg covered with feathers down to the foot. Instances have been related of young children, having beencarried away by Golden Eagles. Martin in his description of the Hebrides, mentions a man, at that time living on the Isle of Skye, who when an infant was left lying in a field by his mother, and during her absence an Eagle pounced upon him, and carried him some distance to the side of Lock Portrie. Some shepherds providentially heard his cry, and ran to his rescue, before the Eagle had time to injure him. His name was Neil, and he was afterwards surnamed Eagle. This Eagle is found in most parts of Europe and America, and lives to a great age; one is said to have lived in confinement 104 years, at Vienna the capital of Austria.

The Whiteheaded or Bald Eagle is a native of Africa and America. It procures a large portion of its prey from rivers which abound in wild-fowl, and also it is said robs the Fish Hawk of the fish which it has just taken from the water. When the Fish Hawk rises from the water clutching its prey in its talons, the Bald Eagle glides from its perch, and striking at the Hawk, induces it to let go its prey, which the Eagle directly seizes, before it reaches the water, and the poor Hawk has to hunt once more for his dinner. This Eagle usually builds its nest on a tall tree, destitute of lower branches. Its general color is a deep brown, or chocolate; the head white.

The Fish Hawk is found in Europe, Asia, and America. They feed entirely on fish, and are therefore only found near water; their appearance is usually welcomed by the American fishermen, as they usually come with large shoals of fish. It builds on a tree, and increases its nest every year, so that an old nest is very large, and many smaller birds are allowed to build

under and about it. Its neighbourhood is not so much dreaded as that of the other Eagles, as it does not prey on land animals. In color, the back is brown, the underparts usually white.

The Harpy Eagle differs from others in having a crest of feathers on the crown of the head, which can be raised at pleasure. It is said to be the strongest of the Eagle tribe. It is a native of America only, and procures its food by skimming along the ground and amid the trees of the forest. It preys on the sloth mostly, but also devours hares, rabbits, birds and smaller animals, killing them by a single gripe of its talons, which usually pierces the heart. It is of a dark slate color above, the under parts white, with a dark band across the chest, and the legs yellow. A splendid specimen exists in the Zoological Gardens, Regents Park. The Harpy, when surprised in its native woods devouring its prey, will not leave it, but will show an evident disposition to fight for it.

The Lammergeyer is a native of the Alps, and of European and Asiatic Mountains. In its general appearance it differs from the Eagle, but not sufficiently to alter the place of it in Zoology. Its shape is more like a Vulture, than an Eagle, but the head is not bare like that of the Vulture. It is notorious in Switzerland and in the Pyrenees for the havoc it makes among the lambs and kids. In Switzerland it is said to attack and kill the Chamois, in spite of its strength and swiftness. Like the Golden Eagle it is said to have carried off children. A variety of this animal is mentioned by Bruce, as having been seen by him in Abyssinia under peculiar circumstances. While his servants were preparing for dinner on the summit of a lofty mountain, a bearded vulture came and seated himself in the centre of the circle, frightening the natives very much; after trying in vain to take some meat from the boiling water, he made free with two large pieces lying

on a platter close by, and slowly carried them away, one in each talon. On returning for the second load he was shot.

The Secretary Bird is a native of Africa, and of the Philippine Islands. It derives its name from the quills or plumes at the back of its head; the Dutch fancying them to look like the secretaries of their fatherland, with their pens behind the ears. It is very tall, the legs, wings, and tail being long, and is exceedingly useful in destroying snakes and other noxious reptiles,

Its color is a bluish grey, some of the tail feathers black. Their usual mode of operation is to protect themselves from the serpent's bite, with one wing held in front; the bend of the wing is very bony, and strikes severe blows, and whenever the Secretary can strike fairly the serpent is stunned and immediately killed by a blow of the bird's beak, which cuts open the head. M. Le Vaillant shot one, which on opening, he found to contain in its crop, eleven lizards, three serpents, as long as a man's arm, eleven small tortoises, and a number of locusts and other insects. This bird had just killed a serpent, proving that hunger had not induced it to do so, but a natural hatred to the serpent tribe, an instance of the goodness of Providence, in placing it in a country so infested with them.

Of the Hawks there are many kinds, differing in size and appearance, but alike in their general habits. They were formerly much valued in this country for hawking, being flown after various kinds of game. The Heron was the chief prey of the Hawk, and in those days, Heronries were encouraged as Rookeries are now. Hawks are common in this and many other countries, preying on birds and small animals. The general appearance of the tribe is that of the Eagles. The Hawk usually strikes its prey down with its talons, but sometimes with its beak. Many of them are astonishingly swift, flying at the rate of sixty or seventy

miles an hour. The principal Hawks are, the Peregrine Falcon, Merlin, Bengal Falcon, Gos Hawk, Sparrow Hawk, and Chanting Hawk. Among the Hawks, as in most other birds of prey, the female is larger than the male, the reverse of which is usual among the Mammalia.

The Kite and Buzzards rank among the lower falcon tribes. The Kite is not so fierce as the Hawk, nor does it fly so high, but secures its prey chiefly in flying along near the ground. It is the pest of poultry yards, for if it be successful in taking one chicken, it will return from time to time and probably secure the whole brood. It feeds likewise on rats, mice, reptiles, and insects. In the Buzzard the beak is small, and less powerful, and the bird though strong, is not so active as the other Falcon tribes. The Honey Buzzard derives its name, from its habit of eating young bees, wasps, and other insects, which it finds in the nests of bees, &c. It also devours moles, rats, mice, and reptiles of various kinds. The Common Buzzard is frequently seen in England, but the Honey Buzzard seldom pays us a visit. It is a native of the warm parts of Europe and Asia.

We have next to notice the Vulture family, distinguished from the Falcons, in having the head and neck destitute of feathers, with a sort of ruff round the lower part of the neck, beneath which they can withdraw the greater part of the head and neck while asleep, or while digesting their food. The skin over the breast and crop is usually bare of feathers; toes and talons are comparatively weak. Eagles and Vultures bear the same relation to each other, that the Lion and Tiger do to the Jackal, Hyena, &c.; the Eagle will only devour the prey which he has himself killed, but all kinds of carrion are acceptable to the Vulture. In some hot countries, it is of great use in clearing away the filth, which if left to accumulate, would breed the deadly

pestilence and fever ; it is the great scavenger of those climates where putrefaction commences soon, after death, and in some places, great encouragement is given to it ; in Jamaica, a fine of £5, is imposed on persons who destroy the Vulture, called the Turkey Buzzard, within a certain distance of any town. Among the principal Vultures we may mention the Condor of South America, Egyptian Vulture, the Griffon, the Indian, and the King Vulture.

The Condor inhabits the mountainous regions of South America, and is distinguished by its enormous comb, reaching from the base of the beak to the top of the forehead. It feeds on carrion like other Vultures, but kills its own prey as well. Its size is so great, that it sometimes attacks the Puma with success, as well as the Llama. It is however easily taken while asleep or while gorged with food, being like most Vultures in that state, incapable of exertion, and almost unable to rise from the ground.

The Egyptian Vulture is a native of Asia, Africa, and some parts of Europe. In all the eastern countries it is highly esteemed ; its habits of devouring carrion and various kinds of filth being of great service. It is large and flies to a great height, and with great swiftness. It is sometimes called Pharoah's Chicken, and its image is found on many of the tombs ; showing that it was once held sacred. The general color is white ; the bill is nearly straight.

The Griffon is large and powerful, and so insatiable in its appetite, that on discovering a carcass it will continue to devour as long as any flesh remains on the bones. It may be seen for many days perched on one carcass. This Vulture in common with the Turkey Buzzard and most other Vultures, has the power of disgorging its prey ; it never carries any food to its young in its claws, as the Eagles and Hawks do, but in its crop, and, on arriving at the nest, throws up or

disgorges the half-digested mass. Its general color is a light brown, inclining to yellow ; head and neck white.

The Indian Vulture resembles the others in its general habits. It is found in most parts of India, and always follows armies, to feast on the slain. They in common with all the Vulture tribe, are endowed with a wonderful faculty, either of sight or smell, perhaps of both ; if the dead body of an animal be left to putrify, numbers of these Vultures will soon collect round it, though probably not one has been seen for weeks before.

The King Vulture is a native only of America. It derives its title from the sway which it holds over the smaller Vultures, who do not presume, while in the company of this King, to commence their feast on any prey which falls in their way, until it has first satiated itself. This species is considered one of the most beautiful of the Vultures ; its general color is light brown and black, the skin of the head and neck is finely colored with orange, scarlet and violet ; the comb is of a bright yellow color.

The Nocturnal Division of Raptorial Birds, includes the Owls. The formation of these birds, is peculiarly adapted to their habits, and shews evident instances of design. The structure of the eye differs materially from that of the Diurnal section of the order. The eye is large and staring, but cannot be kept open during the day, without the nictitating or winking eyelid being drawn over it, in the night the eye is uncovered and the Owl can see with ease and facility. The hearing is most acute, and is especially provided for, by an apparatus differing, we believe, from any to be found in other birds, the opening of the ear being covered, with a large moveable flap or lid, which the Owl can raise or close at pleasure. The plumage also, instead of being stiff as in the diurnal birds, and consequently noisy, is

exceedingly soft, and the passage of the bird through the air is so noiseless, that it is enabled to pounce on the mouse, young rat, and other noxious animals.

The principal Owls are the Barn Owl, Hawk Owl, Horned Owl, Great Owl, and the Burrowing Owl of America. The Barn Owl is very common in the warmer parts of Europe, and in England. It hides itself during the day in ruinous places or buildings, and may be seen as twilight darkens, silently beating over the fields and hedge-rows, after the mice, shrews, &c. It has been falsely stated that the Barn Owl is an enemy to young pigeons, and it has consequently been much persecuted by farmers; it is however an established fact, that this Owl feeds exclusively on small Mammalia and insects. This has been proved by the stomach having been examined when the bird was killed. We should have previously mentioned, that in all the Rap-torial Birds the parts of the prey which are indigestible, as the bones, feathers, hair, and claws, are disgorged from the stomach in the form of balls or pellets. These pellets are found in numbers near their haunts, and on examining those of the Barn Owl, no relics of birds are found. The number of Mice and Rats destroyed by the Barn Owl may be imagined, when it has been proved, that the bird while rearing its young, carries to its nest, a mouse or young rat every twelve or fifteen minutes during the night. The Barn Owl is said to lay eggs in its nest while the first pair of young ones are being reared, so that several pairs may be reared in one season. The Barn Owl is nearly white, varied with crooked colored lines and dots.

The Hawk Owl is a native of the Arctic Regions, where in the summer its prey is mice and insects; in the winter it preys on the birds of those Regions. The head is much smaller than in the other Owls, whence its name, and its eyes being fitted for a dull light, enable it to procure its food by day. It is so bold that

when a hunter shoots a bird or other animal, it will frequently alight on it, and endeavour to carry it away. Its usual color is a brown ground with white spots and dark stripes.

The Great Owl is the largest of the tribe. It has small tufts of feathers above the eyes, which are commonly called horns. It is found in the North of Europe and Asia, but is seldom seen in Britain. This species from its size is also called the Eagle Owl, it feeds on fawns, hares, rabbits, &c., and makes its nest in ruined buildings. Its usual color is a mixture of yellow, brown and black streaks; the beak and claws are black.

The Virginian Horned Owl is a native of North America, where it inhabits the thick forests, feeding on turkeys, rabbits, hares, &c. It has two large plumes or tufts over the eyes, and utters a horrid cry during the night. A curious story is related of a party of Scottish Highlanders, who made their watchfire in the woods, during the night with part of an Indian tomb, and hearing at intervals the dismal cry of the Horned Owl, endured an agony of fear, supposing it to be the moaning of the departed spirit of the Indian, whose tomb they had taken to pieces. Its color is brown and red, striped; the throat nearly white.

The Burrowing Owl of America is small, and differs from the rest in its habit of living in the holes of the prairie dog in North America, and the armadillo of South America, instead of perching on trees. The legs are long in proportion to its size, it feeds on mice, reptiles, and insects. The peculiarity of their living in the same burrow with any other animal has been questioned, but there seems to be little reason left to doubt it. In some parts of South America, where it finds no ready-made holes, it is its own workman. The prairie dog is a species of Marmot, and among them the Burrowing Owl is most frequently seen seated to-

gether on the hillocks, under which they form their burrows. Like the other Owls, they occasionally hoot. The color of this Owl, is light brown, spotted with white, the wings dark brown, and the lower parts almost white.

ORDER PASSERES.

The Second Order of the Class Aves, is called *Passeres* or Sparrow-like birds, and by some Naturalists, *Insessores* or Perching Birds. With respect to their perching, we will not consider that as anything peculiar to the birds of this order, as many of the *Raptores*, and others can perch with as much facility as the *Passeres*. We therefore call it *Passeres*, (from *passer*, a sparrow). The Order is divided into five sections; viz. *Dentirostres*, or tooth-billed birds; *Fissirostres*, or wide mouthed birds; *Conirostres*, or cone-billed birds; *Tenuirostres*, or thin-billed birds; and *Syndactyli*, having the toes united at the base. It will be seen that the birds of this order differ from each other materially in many points, but it must be remembered, that these birds have been placed together in this class, because they are neither raptorial, climbers, gallinacious, coursers, waders, nor swimmers, and that Naturalists would gladly class or arrange them differently, but that so many fresh orders would be required.

Dentirostres.

The *Dentirostral* Section are so called from having a notch or tooth in the upper mandible of the bill, which is seen in some more than in others. This section contains the Butcher Birds, Flycatchers, Thrush, and various kinds of warblers. They feed on insects, worms, slugs, &c.

The Butcher Bird, is a migratory bird, and is found in England in the summer and autumn; it derives its

name from a habit of spiking its prey on a thorn, previous to its tearing it to pieces ; as the Butcher Bird frequently kills more than it can eat, many young birds may be seen impaled round some of the nests of the Butcher Bird. This bird is also called the Shrike. It is common in Russia, where it is sometimes kept tame in houses, and also in America. It takes its prey by pouncing suddenly upon it, in the manner of the Flycatchers. As the Passerine order of birds contains so large a number of different birds, our limits will only allow us to notice one or two of each family.

The Flycatcher, as its name implies, feeds entirely on insects. It is furnished with short stiff hairs or bristles at the opening of its mouth, which assist it in the capture of its prey. It is migratory. The usual color of the upper parts is brown ; under parts whitish. There are several species, distributed over most countries.

The Thrush tribe includes the Thrushes, Blackbirds, Mocking-birds, and Cat-bird. They are all known by the notch at the tip, of the upper mandible of the bill, which is smaller than in the Shrike or Butcher bird tribe. The Thrush and Blackbird are well-known English birds, and as such, require no further notice. The Mocking-bird, is a native of America, where it is noted for its habits of imitating the notes of other birds, which it does very correctly. From this habit it derives its name. Though possessed of this power of correct imitation, few birds are plainer in appearance, being about the color of a hedge-sparrow, and about the size of the Thrush or Blackbird. We venture to give a small extract showing a little of the Mocking-birds variety of tune and its effects. "He whistles for the dog ; Cæsar starts up, wags his tail, and runs out to meet his master : he squeaks out like a hurt chicken, and the hen hurries about with hanging wings, and bristled feathers, clucking to protect her injured brood.

The barking of the dog, the mewling of the cat, the creaking of a passing wheelbarrow, follow with great truth and rapidity."

The Cat-bird is also a native of America, where it is much disliked and persecuted by young and old; the reason of which appears to be, its fondness for the finest and earliest fruits. Its notes, at times, resemble the cry of a cat. It much resembles our Thrush, but its notes are not so melodious. Its visits to the gardens and orchards are carefully watched; it is so bold that no scarecrow alarms it, so that the farmers set boys to watch for it, with guns.

Among the most beautiful of the Thrushes, may be noticed the Breve, a short-winged bird, about the size of a magpie. It is peculiar to New Holland, where it is very useful in destroying great numbers of Ants. The tail of this bird is short. The colors are brilliant. The feathers are blue on the back; the top of the head black, and the breast and lower parts whitish.

Another Australian bird is the Menura, or Lyre-tailed bird, remarkable for the long feathers of the tail, two of which on the outside are thickly plumed, and in shape resembling the frame of an ancient lyre; between these are many long, narrow feathers, appearing like the strings of the lyre. The large plumed tail is confined to the male bird. The food of this bird consists chiefly of insects, such as centipedes, beetles, ants, and others, which are exceedingly numerous in some of the hotter parts of Australia. The bird is about the size of a common pheasant; its color being on the upper parts, deep brown, under parts, ashy grey.

The Warbler tribe contains many varieties, among which are the Nightingale, Wren, Wagtail, Reed, Sedge, and other Warblers, Blackcap, Robin Red-breast, Whitethroat, and Redstart or Redtail. The Nightingale is the sweetest songster of Europe, and ranks with the Mocking-bird of America. It is me-

gratory, and it sings during the night, when it is much admired. The Wren, Wagtail, and Robin are well known English birds. The Warblers are insect-eaters, and usually inhabit the sides of brooks, ponds, &c. where flies and other insects congregate. The Redstart is migratory, it frequents old walls, houses, and ruinous places, feeding on the insects which it finds there. The general color is brown on the upper parts; the male has a patch of light blue on the top of its head. Its song is pretty, but very weak. It has a curious fashion of shaking its tail when it alights on a wall or branch.

Fissirostres.

The Fissirostral or Widemouthed birds, are insect-eaters, and include the Night-jar or Fern-owl and the Swallow tribe. The Night-jar or Fern-owl is a native of Europe and America. It is distinguished by the large size of its mouth, and possesses in common with most of the widemouthed birds; a number of stiff hairs called vibrissæ, at the opening of the mouth, and sticking outwards. It likewise has the middle toe notched, as it is supposed, to pick up some of its prey. It feeds on large insects, as beetles, cockchafers, &c. It is seldom seen in the day, as the insects fly higher during the day, but descends as evening comes on, when the Night-jar is most busy. It is frequently called Goatsucker, from an idea that it sucked Goats, and communicated diseases to them, this however is wrong; their object in being near any animal, is to secure the insects that so frequently annoy them. The Fern-owl, is rather larger than a Thrush, and resembles it in form and habits.

The Swallow tribe is one of the most interesting among birds, from the confidence and friendship which it invariably seems to feel in and towards man. The Common Swallow, Marten, and Swift are well-known. They are all insect-eaters, and are furnished with vi-

brissæ at the opening of the mouth. They are all migratory, leaving this country in the autumn and returning in spring. During its absence, it is believed to visit India and Africa. The design of this instinct is obvious, when we consider that if they were to remain in this country during winter, they would be unable to procure food, insects being absent. The most remarkable of the tribe is the Feculent Swallow, found in China and other parts of Asia. It resembles the Common Swallow in appearance, but forms a curious jelly-like nest, which is much sought for by the Asiatics to put in their soups. The collection of these nests gives employment to many natives of the East India islands, and to the Chinese. It remains a matter of doubt, as to what these nests are composed of. Some writers suppose they are obtained from jelly-like animals of the sea, but the nests are found in inland places very far from the sea.

Conirostres.

The Conirostral section are known by the strength and thickness of the bill, and by its conical shape. It includes Larks, Finches, Crows, Starlings, Buntings, and Birds of Paradise.

The Lark tribe contains, the Skylark and the Woodlark, both of which are common in England. The Lark is the only English bird which sings on the wing, or while it is flying. It feeds on worms, insects, &c. It has the hinder toe lengthened very much, but for what purpose, is not positively ascertained, though some writers assert, that the lark has been seen to carry its eggs from place to place, during the time of mowing and other agricultural operations.

The Finch tribe includes the House Sparrow, Canary, Greenfinch, Bulfinch, Goldfinch, Linnet, and some others. The habits of most of these are generally well known. The Bulfinch is remarkable for its power of

learning tunes. They are brought over in numbers from Germany, where many persons are entirely employed in teaching them tunes. They are called "Piping Bulfinches." In England they are very injurious to the young buds of trees in spring, stripping them off a tree in a very short time. The Canary was originally brought from the Canary islands, where it lives in flocks. The wild bird is of a dull green color, but becomes yellow after having been tamed and domesticated. The Goldfinch and Linnet are both much liked as songsters. All the Finch tribe are of great service to the farmer, as they devour the seeds of many troublesome weeds, and thereby hinder their growth.

The Grosbeak tribe includes the Sociable Weaver Bird of South Africa, and the common Crossbill. These birds feed on the seeds of trees and plants, and are distinguished by the bill, the points of which cross each other, so that one pushes one way, the other another. This arrangement is very useful to the Crossbill, which feeds on the seeds of fircones; it separates the scale of the cone from the cone itself, and then draws out the seeds with its peculiar scooplike tongue, which is separated and jointed in the middle. The Sociable Bird derives its name from these birds building their nests in great numbers, close to each other on the same tree.

The Crow tribe includes the Common Crow, Rook, Raven, Jackdaw, Magpie, and Fruit Crows.

The Common Crow, Rook, Raven, and Jackdaw are natives of England, and their habits, food, &c., generally known. Though some of them are much persecuted, they are believed by most intelligent persons to be very useful in destroying insects, slugs, worms, &c. Though most of them are partial to other kinds of food besides insects, they seldom eat grain, never being seen to follow the sower, though they usually follow the ploughman. At certain seasons however they do injury to young turnips, which they pull up by the roots,

not to eat, but to find the insects which may often be seen on them.

The Magpie is not quite black, but black and white. It bears in common with other Pies, a bad character for thieving; having a natural disposition to hoard, it sometimes hoards such things as money, spoons, &c., often causing suspicion among persons.

The Fruit Crows are natives of South America, where they feed on berries, fruits, &c. Little is known of their habits. The Satin Bird of New Holland is connected with the Crow family. It is remarkable for the runs or paths which it forms, making bowers by drawing the long grass and bushes together at the tops, and ornamenting the runs with bones, shells, and brilliant feathers. The bird is of a black color.

The Starling, is a native of England, where it feeds on insects, &c., and builds or lays in hollow trees. At certain seasons of the year, Starlings congregate in large flocks, mixing with Rooks and feeding with them. They alight boldly on the backs of cattle, and pick out insects from their coats. They are of a glossy greenish black, with brown spots on them.

The Hornbills are natives of Africa and Asia, and are known by the large hollow bills, with a box-like crest or helmet on the top of it. They feed chiefly on mice, small birds and fruits, throwing them up in the air, and catching them in their bills, as they fall.

The Bird of Paradise is a very splendid bird, found in some of the islands of the East Indies. There are several species, and most of them covered with plumage of the most magnificent colors. Many of the skins are imported into Europe, and worn by ladies as ornaments for the head. When first imported, the legs were previously cut off, which gave rise to their name, people thinking or pretending to think, that they rested in the air, or in a place like a paradise, feeding on dew, with other marvels. They are now preferred with the legs

on. They feed on fruits, and are killed by the natives during the night, with bows and arrows. The place where they most abound is the island of New Guinea. This bird seldom appears during the heat of the day, appearing to dislike the scorching heat of the sun at that time.

Tenuirostres.

The fourth or Tenuirostral section of Passerine birds includes the Hoopoe, Nuthatch, Sun-bird, and Humming-birds. They are all remarkable for the thinness of the bill; in some the bill is curved, in others straight.

The Hoopoe, is a native of Europe in the warmer parts, but is seldom seen in England. It has a large crest on the top of the head, of an orange color. The Hoopoe is solitary, and feeds on insects, worms, &c.

The Nuthatch, is a native of England, and feeds on insects, which it procures from the bark of trees, and walls. It has a long pointed bill for this purpose, with very strong short legs and sharp feet. It is said to knock the bark of the tree, to induce the insect to come out. From the shortness of its legs, and the large size of the feet, it hangs under branches of trees, back downwards, with great ease, creeping round and round, in a spiral direction.

The Sun-birds of Africa, feed on the nectar of flowers, which is often the food of the Hoopoe.

The Humming-birds are natives of America and the West Indies, and are the smallest of all the feathered tribes, the smallest being of the size of a large humble bee. The tongue of the Humming-bird is divided into several parts, by help of which, they are enabled to suck honey from the nectaries of flowers. Their colors are brilliant beyond all description, rivalling in brilliancy the richest and most sparkling jewels. Their swiftness of motion is very great, crossing the sight like a spark of light. Some species feed on insects, and one almost entirely on spiders.

Syndactyli.

The fifth or Syndactylous section are known by their having the toes, (outer and middle) united for some length from the base. It includes the Kingfisher and the Bee-eater. The Kingfisher is a native of most countries, feeding on fish, and inhabiting marshy places. Its plumage is exceedingly brilliant, but like most other brilliantly dressed birds, its voice is harsh. It is solitary, sitting on a branch beside a brook, waiting for a fish to pass, when it darts down, and secures it. The Bee-eater has the bill long, and slightly curved, its outer and middle toes joined. It is a native of the warmer parts of Europe and Asia, also of Africa. Like the Kingfisher, it haunts streams and ponds, but not for fish; it feeds chiefly on bees, wasps, and other insects. Its colors are brilliant; it is eaten for food in Egypt and other parts of Africa. They breed in holes of banks, which they burrow for themselves, laying from five to seven eggs, nearly white.

ORDER SCANSORES.

The Third Order of the Class Aves, is called Scansore or climbers, (from scando, I climb;) the birds of this order resemble each other only in having the toes placed, two before and two behind. This arrangement assist the birds in climbing, many of them obtaining their food by clinging to the bark and branches. This order contains the Toucan, Woodpecker, Parrot, Cuckoo, Trogon and Wryneck.

The Toucan is a native of South America only. It is known by its enormous bill, which is formed of a thin hard substance, and lined with a spongy fibrous network. The tongue is long, hard, and hairy on both edges. It feeds on animals of various kinds, as birds, mice, reptiles, and eggs. The colors of this bird are very splendid, differing in each variety. Its mode of

roosting is very curious ; when the bird perches itself for the night, it turns the tail upwards over the back, and places its bill beneath one of its wings. The upper mandible of the bill is usually notched, and the bird, after breaking the bones of its prey, tears it in pieces and swallows it. There are many different varieties.

The Woodpecker is a native of most countries, and in most cases is a migratory bird. Besides the arrangement of the toes which we have noticed, the tongue of this bird may claim our attention. As the food of the Woodpecker consists chiefly of insects, and those insects are found chiefly in the crevices of the bark of trees, it is necessary that the bird should be provided with some instrument to extract them. The tongue answers this purpose, being long, prehensile, and flexible, and also covered with stiff hairs turned backwards, and a sort of slimy glutinous saliva. When this is thrust into the hole, the insects caught in the stiff hairs, are instantly drawn out and devoured. The tail is strong, and the tail feathers while the bird is climbing are pressed closely to the bark of the tree, thereby helping to support it, while hammering itself a hole in the bark.

The Parrot tribe is remarkable for its curious bill and tongue, in which particulars the tribe seems to differ from all others. The upper mandible of the bill is much curved, and hooked over the lower mandible which is only about half as long. The tongue is large and fleshy, and the edges of the beak lined with tooth-like notches. They are all natives of hot climates, and feed on fruits. This tribe is divided into five sections : 1st, Cockatoos ; 2nd, Macaws ; 3rd, Parrakeets ; 4th, True Parrots ; 5th, Lories.

The Macaws are natives of South America, and are the largest of the Parrot race. They do not possess the voices or powers of imitation of the True Parrot. The tail of the Macaw is very long and wedge-shaped.

The bill is very large. The Macaw breeds in hollow trees.

The Cockatoo is a native of the East Indies and of Australia, and differs from the Macaw, in having a crest on the top of its head, folded down when at rest. Its habits are those of the Macaw.

The True Parrot has the upper mandible of the bill toothed, and the tail shorter. It is found in most tropical climates, and when taken soon becomes tame and familiar. They possess a great ability of imitating men's voices, and other noises. They feed on fruits, and breed in hollow trees.

The Parrakeet is confined to the Eastern Indies and Archipelago. It is much smaller than the Parrot, the bill is not so much curved, and the tail longer. Like the Parrots, they are fruit-eaters, building in hollows. They are easily tamed, and great numbers are brought to Europe for sale, being much liked for their splendid plumage.

The Lories have the upper mandible notched and much curved, the tail long and very broad. They are natives of the East Indian Islands. Besides those peculiarities we have mentioned, the Lories have a brush at the tip of the tongue, for sucking up honey.

The Trogons are a tribe of very splendid birds found in South America, India, and Africa. In their habits they much resemble the Parrots and Woodpeckers. They feed on insects, which they catch in the morning and evening, remaining quiet in the heat of day. One of the most beautiful of these is the Resplendent Trogon of Mexico, of which it is said, that the Mexicans used its feathers to form their beautiful mosaic pictures.

The Cuckoo is a well-known bird, migrating to this country in spring, and away again in autumn; feeding on insects, and laying its egg in the nest of the poor little wagtail or hedge-sparrow, whose young ones, the young Cuckoo turns out as soon as he is strong enough,

that he may be the better provided for. There are many species of Cuckoo, chiefly found in America, where all are insect-eaters, some also eating fruits.

ORDER GALLINÆ.

The Fourth Order of Birds is called Gallinæ, or Fowl-like birds, (from gallina, a hen.) These birds are all distinguished for usefulness, being without exception, all good for food. They rank among Aves, as the Ruminants rank among Mammalia. They are generally slower birds than others we have noticed, seldom leaving the ground, except to perch on some branch. The legs are very strong, and they can run with great swiftness. As their food is partly grain, they require to soften it, to get the nutritive goodness out of it; for this purpose they are provided with a very intricate and complex stomach, and the gizzard is very powerful. Some birds of this order, as the turkey and common fowl, have been made to swallow needles, glass, metals, and even lancets, covered with paste to hinder them from cutting the throat; on opening them a few hours (from eighteen to twenty) after, they were found broken, and the points as it were ground down by the action of the gizzard, which was uninjured.

This Order includes the Turkey, Peafowl, Curassow, Guinea-fowl, Pheasants, Grouse, and Pigeons.

The Turkey is common in Europe, and is valued in most parts, for the delicacy of its flesh. This bird was originally imported from America, where it runs wild in the woods and prairies, in great numbers, feeding on beech nuts, seeds, insects, &c. The Wild Turkeys in common with all the rest of the Gallinaceous birds, are gregarious, being sometimes found in flocks of more than a hundred each. They are killed in America for the market. The Wild Turkey resembles the common Turkey, so well as to need no description.

The Peacock also common in England and other parts of Europe, is well-known, and distinguished in the male for the beauty of the tail feathers. It is a native of India, where it is common in a wild state; it is thought to have been imported into Europe by Alexander the Great, when he invaded India. It is mentioned in the Scriptures as being one of the birds brought as tribute to Solomon. This bird was formerly thought a great delicacy for the table, but has not of late been much used. It makes a nest on the ground and lays from twelve to fifteen eggs. The tail is not fully grown till the third year.

The Curassows are all natives of South America. Some of them are nearly as large as the Turkey. They differ from the rest of the order in having the hinder toe placed exactly opposite the others; whereas the rest of the order have the hinder toe placed higher up, on the back of the leg. Their flesh is said to be even better than that of the pheasant. They are gregarious, and feed on worms, insects, seeds, and grain. Many have been tamed in South America, where they live in the farm yards, as the common-fowl with us. The male is always furnished with a crest composed of long feathers.

The Guineafowl or Pintado was a native of Africa originally, whence its name. Its feathers which are of a bluish grey color are beautifully spotted with black. It is a restless, noisy bird, and a swift runner. It is now common in the farm yards of this country, and its habits somewhat resemble those of the common fowl. Its eggs and flesh are excellent eating.

The Pheasant tribe embraces the Common Fowl, Pheasant, and Jungle Fowl, the last of which is found in India, in a wild state, and is the original of our Common Fowl, which it resembles both in appearance and habits. It inhabits the forests and jungles of India. The habits of the Common Fowl are too well-known

to need description. Most countries possess a peculiar variety, and in all, the male is furnished with a larger comb, or helmet, spurs, and richer plumage than the female.

The Pheasant, which, next to the Peacock, is the most beautiful of our gallinaceous birds, was originally imported into Europe from Asia. It is now common in England in plantations, where it is protected from the public by game laws. An instance of design is seen in the difference of color, in the male and female; the colors of the male being very brilliant and attractive, while those of the female, are of a dull brown. If the colors of the female were so gaudy, they would attract too much notice to the bird, while sitting on her eggs, and she would become the prey of other animals to a much greater extent. The Gold and Silver Pheasants of China, are extremely beautiful; in their habits and size they resemble the English. Some of the Pheasants of India are very much larger than the Common Pheasant. The Horned Pheasant is nearly the size of a Turkey. Many others nearly equal it.

The Grouse family includes the Grouse, Partridge, and Quail tribes. The Grouse tribe, the largest of which is the Capercailzie, are found in the northern parts of the world. The Capercailzie, was formerly numerous in the woody parts of the British Islands, but is now almost or entirely driven away, the forests having been thinned or cut down. It is still abundant in Norway and Sweden, where its flesh is eaten for food, and whence many are exported to England and other countries. It is about the size of the Turkey; the color of the male is dark brown in the upper parts, black underneath. The female is lighter in color, and less in size.

The Common Black Grouse or Black Cock is a native of Scotland and the northern heaths and moors

of England. It is likewise found on the continent. Its color is, in the male deep black, with a white band across each wing; in the female, a light brown, speckled, and barred with black. The Dusky, Pinnated, and Ruffed Grouse are natives of North America; they resemble the Common Grouse in their habits.

The Ptarmigan is a species of Grouse, remarkable for its change of color during the latter part of autumn, and in the spring. In summer, its plumage is of a reddish color, varied with black, but as winter approaches, the color changes to a pure white, making the bird to correspond with the snow. These birds are common in England, Scotland, and all the northern parts of Europe, and many thousands are brought to England to the markets of London and other large cities.

The Partridges are natives of most countries, inhabiting the plain open country, feeding on insects and vegetables. They are solitary, except during the time of breeding. In England they are preserved, and shot during certain months of the year, when the young ones are full grown. They are of a brown speckled color in England, but most countries possess their peculiar varieties.


The Quail is common in Europe during the warm seasons of the year, but as winter approaches, it migrates to a warmer climate in Africa or Asia. Their flesh is exceedingly delicate and good, and they are caught in great numbers, in nets, and with calls, which are made to imitate the call of the birds. These birds are exceedingly quarrelsome, and they were formerly kept for the purpose by some of the natives of Greece. In Greece, though they encourage them to fight, they do not eat the flesh. They closely resemble the Partridge, and are the smallest of the poultry tribe.

The Pigeons, though ranked among the Gallinæ, are decidedly worthy of a separate order, so great are

the differences between them and the rest of the Gallinaceous birds. Unlike the Gallinæ, they build on the branches and sometimes in the hollows of trees. The young Gallinaceous birds are able to run about, and usually to feed themselves as soon as they are out of the shell, but the Pigeon is some time before it is able to leave the nest, and for the first few days is fed entirely from its parent's crop; the first food being a fatty substance, which is formed in the stomach of the old bird, and when first fed on grain, the grain is previously softened in the crop of the old birds. The Pigeon also lives constantly in pairs; the Gallinæ seldom pair, or where they pair, it is only for the breeding season. Lastly, the hinder toe is unlike that of the majority of the Gallinæ, being opposed to the rest and suited for perching. Of the Pigeon tribe there are many varieties, the most remarkable of which are the Passenger, Carrier, Tumbler, Pouter, Turtle, and Crowned Pigeons.

The Passenger Pigeons are natives of America, where they are found in such prodigious numbers, that during their periodical flights, the sun's rays are quite obscured for some time. Its flight is extremely rapid; it is said by credible naturalists, that it frequently flies at the rate of a mile in a minute. In some parts of America, they have their regular roosting places, where at certain seasons, many thousands are killed; pigs are driven into the woods to fatten on them, and many of them are salted for winter food. The account given by the celebrated Audubon of this bird, is exceedingly interesting, but much too long for us to insert. It may be seen in most books of birds.

The Carrier Pigeon derives its name from the service it frequently performs, in carrying news from place to place. The piece of paper or letter is tied under the wing of the Pigeon, when it mounts into the air, and in a few minutes wings it way to the place



whence it was brought. Thus news is sent from London to Antwerp, in Belgium, (186 miles), in five hours and a half.

The Tumbler is remarkable for its habits of rolling over and over in the air.

The Pouter for its immense crop, which it has the power of dilating or puffing out at will.

The Turtle is a migratory Pigeon, visiting our island in summer. It is remarkable for its attachment to its mate, and is a general favorite in all countries.

The Crowned Pigeon is the largest of the tribe. It is a native of the East Indian Isles, is larger than a common fowl, and may be known by its fine crest. Its color is light blue.

ORDER CURSORES.

The Fifth Order of birds is called Cursores or Runners; (from *curso*, I run.) It is divided into two families, in accordance with the formation of the wings and bills. The first family is called Brevipennes or short-winged birds; the second, Pressirostri or Flat-billed birds. The section Brevipennes includes the Ostrich tribe, which contains the Ostrich, Rhea, Emeu or Emu, Cassowary, &c. All these have the wings so short, as to be unable to fly, but they run very swiftly.

The Ostrich, which is the type of the family, is a native of Africa and the deserts of Arabia. They are of large size and striking appearance; their food is common with the rest of the tribe, consists of vegetable matter, as well as insects, worms, &c. The usual height of the male is about seven feet. They are very strong; the legs are not covered with feathers, but are very thick and well furnished with strong muscles, enabling the Ostrich to equal in swiftness of running, the best of our English race horses. The wings are furnished with beautiful plumes, which as a valuable

article of commerce, makes the capture of this bird desirable. They are hunted by the Arabs on their best horses, but would be of no use if the Ostrich ran in a direct line, instead of which however it runs in semi-circles, and thereby gives the hunter an opportunity of taking it. This bird was called by the ancients "the Camel-bird," from a supposed resemblance, there being no keel to the breastbone as in flying birds, only two toes to each foot, divided something like the foot of the Camel; the eyes too, resemble those of the Camel. The Ostrich lays its eggs in the sands of the desert, and leaves them entirely during the day, in the hottest parts of the world, but returns to them at night, and shows a certain degree of watchfulness over them, for if any of them be misplaced, she will break the whole, and abandon the nest. Frequently, two or three females will lay their eggs in the same hole, in the sand, and take turns in sitting to hatch them. The inner toe of the Ostrich is furnished with a strong hooked claw, which is a dangerous weapon, many instances have occurred, where both men and animals have been ripped up by it. The flesh of the young is good eating, and the eggs are considered excellent; they are cooked in various ways, the usual way being, to cover them with hot ashes, and stir them through a hole, made in one end of the shell. The color of the Ostrich is usually dark in the body, with the tail and wing plumes, white. The Ostrich will swallow almost anything that is given to it, metal, stones, cord, and other substances; one of the finest ever brought to England, died in the Zoological Gardens, from having swallowed part of a parasol.

The Rhea is a native of South America. It is smaller than the Ostrich, and differs from it, in having the head and neck covered with plumage, and three toes on each foot, the middle one being largest. The plumes of the wings and tail are white, but not so valuable as

those of the Ostrich. This bird lays its eggs in a hollow in the sand, like the Ostrich, but the male bird sits on them, instead of the female. The Rhea swims well it is said ; it feeds usually on grain and vegetables, but is fond of picking up small fish from the shores of the sea, and the sides of rivers. It is gregarious, being frequently seen on the plains of South America, in flocks of twenty or thirty. Its color is greyish brown, with black spots and stripes, and the neck circled with black stripes.

The Emu is a native of New Holland, it is nearly as large as the Ostrich in bulk, but the legs and neck are shorter. The feathers resemble hair, the wings are very short, and hidden beneath the feathers. Its flesh is eaten by the natives, but it is killed chiefly for the oil which is obtained by boiling the skin, cut in small pieces, stripped of the feathers. Its eggs are also eaten. The Emu is hunted by dogs, which it frequently kills with its sharp claws, when brought to bay.

The Cassowary is found in several of the East Indian Islands. It may be distinguished from the rest of this tribe, by the crest or helmet on the top of its head, which is of various colors, and by the wattles under the throat. The plumage is very coarse and hair-like ; the wings very small ; toes, three on each foot, the innermost armed with a sharp conical claw. It is much smaller than the Ostrich. Its eggs are eaten by the natives ; they are laid in the sand, and hatched by the sun, like those of the Ostrich.

The Apteryx or Kiwi-kiwi, is confined to New Zealand. It is of such an extraordinary formation, that it was for some time thought to be a fabled animal. In size it equals the common fowl ; it is of a brown color, and the wings are so short, as to be seen with difficulty ; the ends of them are armed with a short hooked claw. The beak is long, slender, and

slightly curved, with the nostrils on the tip of the bill. There is no sign of tail or tail feathers; the legs are short, but very strong, as are also the claws, which number four on each foot. The legs are covered with hard scales, and the claws are adapted for digging. The Apteryx is nocturnal, feeding on insects and worms; it strikes the ground with its feet, and seizes the worms as they appear. The New Zealand chiefs wear dresses formed of the tough skin of this bird, dressed with the feathers on, which they value highly.

The Dodo is an extinct bird, of large size; the only specimens of which are a foot in the British Museum, and a head and foot in the Ashmolean Museum at Oxford; little therefore is positively known, of its formation or habits.

Pressirostres.

The Pressirostrial family includes the Bustard and Plovers. These have been lately included among the waders, but at present we will leave them as they are, until some further decision is come to. They are decidedly runners, but modern naturalists, place them among the waders, because they can fly; though they can fly, their favorite movement seems to be running on the ground, taking wing only when obliged.

The Bustards are peculiar to the Old World. They have stout bodies, long neck and legs, and bills short, conical, and flattened. The Bustards frequent plains, and feed on insects, grain, and young herbage. They run with extreme rapidity. The male is much larger than the female, and is furnished with a large pouch beneath the throat, the use of which is not known. This bird was once common in England, but is now seldom seen; it is very much larger than the turkey; the young ones, two in number, when chased will squat close to the ground and are easily taken. The Bustard is common in Spain and Portugal, but seldom seen in Italy or France.

The Plovers are common in Europe, Western Asia, and North Africa. The wings are long, and so are the legs; they are all migratory, visiting the warmer climates during the winter of the northern countries. They feed chiefly on insects, which they pick up with their long bills. The Lapwing, Dotterel, Golden Plover, Thickknee, and Turnstone, are common in England, at certain seasons of the year. They breed chiefly on marshy moors and fens, laying four eggs generally. The eggs of the Plover and some others of the species are considered delicate food, and are sold at high prices in the London markets. The young of all the species run about as soon as they are hatched, some having been actually seen with the shells on their backs.

ORDER GRALLATORES.

The Sixth Order of Class Aves, is called Grallatores, Waders, or Stilted Birds, (from gralla, a stilt). It includes those birds which obtain their food by wading into the water. They are usually furnished with long legs, so that they can walk into the water without wetting their plumage. This order is very extensive, and many of the species differ from each other in many points. They are divided into three sections: Cultirostrres, or knife-billed Birds; Longirostrres, or long-billed Birds; and Macroductyli, or large-footed Birds.

Cultirostrres.


The section or family Cultirostrres, is so called from the sharp edge of the bill, which is usually long and pointed. It includes the Stork, Heron, and Crane.

The White or Common Stork, though seldom seen in England, is common in Germany and other parts of Europe, and also in Asia and Africa. They are gregarious, and inhabit the low marshy regions of the countries which they visit. They feed on reptiles,

mice, moles, insects, and eels, and their appetite is said to be extremely voracious. They are much esteemed in Holland, for devouring the various noxious animals which abound there, and they there shew so little fear of man, as to build their nests on the tops of the houses. In Spain they are also encouraged, building on the towers and steeples of the churches. One of the most remarkable of the Stork tribe is the Adjutant of India, a large bird, which feeds on snakes and other reptiles, and is serviceable in clearing away offal. It may be known by the great strength and size of its beak, and the width of the swallow. In the stomach of one, Sir E. Home states, that a large black cat was found whole, with a tortoise ten inches long. It has been known to swallow a leg of mutton, a hare, and a shin of beef, with the bone broken.

The Crane differ from the Stork, in having the bill shorter and of a less size, the wings are likewise ornamented with graceful plumes. The Cranes do not, like the Storks, derive the whole of their subsistence from lakes and marshes, but feed on grain and frequent plains and cultivated lands. Among the most remarkable are the Goldbreasted Trumpeter, the Common Crane, and the Demoiselle or Numidian Crane. The Goldbreasted Trumpeter Crane is a very beautiful bird, found in the tropical regions of America. It is gregarious, and moves chiefly by running. This species has been frequently and easily tamed, and is fond of those who are kind to it, coming at their call, and running after them, with the attachment and fidelity of a dog. It receives its name from its peculiar trumpet-like voice. The color of the head and neck is black; the under parts grey; the feet and legs yellow.

The Common Crane is widely distributed, being found in most parts of Europe, Asia, and Africa. The Crane is migratory and gregarious, passing in flocks from one country to another. They are most common



in cold climates, where they feed on frogs, worms, shellfish, and insects. Its general color is dark grey, front of the body nearly black.

The most beautiful of this family is the Numidian Crane or Demoiselle. This bird is found through most parts of Africa. In its habits it resembles the rest of the Cranes, being migratory and feeding on grain, insects, and reptiles.

Its color is a beautiful slate-grey; behind each eye springs a tuft of white feathers, which falling backwards over the head, form a drooping crest. A long, flowing, dark-colored plume also hangs from the breast.

The Heron family is extensive, including the Egret and Bittern. They are all essentially formed for wading, legs very long, neck and bill proportionate. The Common Heron is a well-known English bird, and where it is allowed, will breed in societies, like Rooks, building on tall trees, forming nests of small sticks, leaves, &c. In England, this bird is stationary, but migrates from colder climates. It feeds principally on fish, of which it destroys immense numbers; Willoughby mentions one which had in his stomach, no less than seventeen carp. In former times, the nobles and gentlemen of this country and others, amused themselves by hawking for the Heron. The Hawks were trained for the purpose; and the Herons were protected by law, any one taking their eggs, being liable to a fine.

One of the most beautiful of the Heron tribe, is the Agami, a native of the tropical regions of South America. The habits of this bird resemble those of the Common Heron. Its colors are very brilliant, being of a deep blue on the back, wings, and tail, and the long feathers of the crest, a bright azure.

The Bittern is a native of Europe, Asia, and Africa. It was once common in England, but is now seldom seen. Its neighbourhood may be known by the boom-

ing noise it makes. It was formerly one of the principal quarries or flights of the hawk, when falconry was in its best days. It frequents bogs and marshes, feeding on reptiles, small-fish, &c. In size it does not equal the Heron. The color is a fine reddish ground, beautifully spotted and barred with black. The feathers of the head and neck are long, and can be erected, when the bird is excited or irritated.

The Boatbill is one of the Heron tribe, and is known by the curious form of its bill, which is larger than in the rest of the Herons. It is a native of South America, and its habits resemble those of other Herons. Its colors are, back rusty grey, tail white, a long plume of feathers on the head, of a jet black.

Longirostres.

The second section of the Order Grallatores or Waders, is called Longirostres, or long-billed birds. This section includes the Ibis, Curlew, Snipe, Sandpipers, and Ruffs.

The Ibis, a native of Europe, Asia, and Africa, is distinguished by the beak being thin, arched, and blunt at the end. The Ibis feeds on reptiles, fish, &c. which it procures from among the marshes and banks of rivers, where it abounds. It is migratory and gregarious. One of these birds called the Sacred Ibis, was held sacred, and even worshipped, by the ancient Egyptians. Many of its skeletons are found embalmed in the pyramids and tombs.

The Curlew resembles the Snipe, but the bill is curved downwards. It swims well when it has waded out of its depth; feeds on insects which it procures by running its bill into the soft mud.

The Snipe, in habits, resembles the Curlew, but its bill is straight; it is common in England, frequenting marshes and meadows.

The Ruffs, sometimes found in England, may be known by the length of the plumage round the neck

of the male, during summer. They are exceedingly quarrelsome in disposition.

Macroductyli.

The third section called *Macroductyli*, or large-footed birds, includes the Flamingo, Rails, Moorhen, Jacanas, and Screamers. These birds, inhabiting marshes and rivers, where they require to run over the soft mud, are furnished with long toes, which prevent them from sinking into the mud.

The Flamingo, the largest of the family, is remarkable for the length of its legs and neck. It is found in Europe, Asia, and Africa, where it feeds by the sides of lakes, rivers, and seas. They stand in rows while feeding, and with their brilliant scarlet plumage, look like an army of soldiers. The bill is curiously formed, appearing to be bent in the middle; when the bird feeds, the upper mandible of the bill is laid on the ground, and the bird appears to be leaning on it. There is a smaller Flamingo, found in America and the West Indies. The nest of the Flamingo is a raised hillock of earth, and the bird stands over it to hatch the eggs, with one leg on each side.

The Rail is about the size of our Moorhen, but the bill is longer and slightly curved; it is common in England, and its habits resemble those of the other waders. There are two varieties, the Land Rail and the Water Rail. The Land Rail is also called the Corn-crake.

The Moorhen or Waterhen is a well-known English bird, frequenting retired ponds, marshes, lakes, &c., feeding on insects, grain, and small reptiles. It is of a dark or nearly black color, with the bill short and of a deep crimson. It breeds among sedges and reeds, by the side of the water, carefully covering up the nest when it leaves it.

The Coot is a small bird, which resembles the Moor-

hen, in color and habits. They are both good swimmers. The Coot is found only in retired places, usually in lakes, in the midst of woods.

The Jacana is remarkable for the extreme length of the toes. It is found in America chiefly. The legs are long, and the body gracefully formed. It feeds on reptiles, insects, &c., which it procures in the marshy districts of America. It is of a black color. This bird is so light, as to be able to walk over the leaves of some waterplants, when it appears at a little distance to be walking on the water.

The Screamers of America, are remarkable for their loud voices, and more especially for the curious spurs on the front of the wings, two on each. These birds are about the size of the turkey, the bill is very short; they feed on insects and aquatic plants, but as they inhabit countries where snakes and other reptiles abound, they are furnished with the spurs on the wings, which are of sufficient use to protect them and their young from the attacks of such animals.

ORDER PALMIPEDES.

The Seventh and last Order of birds is called Palmipedes or Webfooted birds, (from palma, the palm, and pes, the foot.) It includes those birds whose toes are connected by a membrane, which enables them to move with great ease in the water, serving the purpose of oars. Some of the birds of this order, are formed expressly for the water, and most of them, however graceful their appearance on the water may be, look very awkward when moving on land. In nearly all the birds of this order, the neck is longer than the legs; thus enabling them to reach their food at the bottom of the water, while swimming at its surface. This order is divided into four sections or families: Brachyptera, or short-winged birds; Longipennes, or

long-winged birds ; Totipalmatæ, or completely web-footed birds ; and Lamellirostri, flat-billed birds.

Brachyptera..

The section Brachyptera or short-winged birds, contains the various Divers, Auks, and Penguins. These birds are distinguished by their short wings, and also in having the feet placed very far backwards on the body, giving them increased power while swimming. The Diver tribe are distinguished by the closeness of the plumage, and the sharpness of the bill. It includes the Grebe and the Northern Diver. The Diver inhabits the Arctic Regions, but migrates southward at certain seasons. It feeds on fish, which it takes by diving under the water. The color of this bird is black on the upper parts, under parts white, with a collar of white on the neck.

The Grebe may be known by the plumes on each side of the head, springing from behind the eye, forming a kind of ruff. The feet of these birds are curiously formed, not being webbed, but single ; on each side of each toe a kind of membrane is found ; this membrane is short and stiff ; and the membranes of each toe are covered with leaf-like scales. It is found in most seas ; its habits resemble those of the Diver. Colors black and white.

The Auks have the wings shorter than the Divers, and in one species they are used only as fins under the water, when they dive. They are found only in salt water. This group contains the Guillemot, Auk, and Puffin.

The Guillemot has the bill rather long, straight, and acute ; the limbs very short. It is found in the Arctic seas of both hemispheres. One species, the Foolish Guillemot, receives its name from its suffering itself to be taken, rather than quit its single egg. They seldom quit the water, except at the time of hatching, when

they sit in an upright position, in ranks on the rocks. This hatching lasts about a month.

The Great Auk has short wings which assist it in diving for its prey, but it is unable to fly.


The Little Auk is able to fly. It is common in the Arctic Ocean.

The Puffin resembles the Auk generally, but has the bill shorter, and thicker, with two horny appendages on the eyelids, one above and one below. They lay their eggs in burrows, in many of the northern islands, and highlands of Great Britain. They lay only one egg, and are frequently taken by the hand when sitting on the egg in the burrow.

The Penguin is unable to fly, from the shortness of its wings. They inhabit colder parts of the Southern Hemisphere; and differ from other birds in having the bones solid or filled with marrow, instead of air. They seldom leave the water; the skin very thick, tough, and oily; the feathers short and stiff; legs very short; the wings hang down like arms. When on shore hatching their eggs, they sit in rows like ranks of soldiers; the males in one place, females in another, and the young by themselves. The females hatch the eggs, by keeping them close between the thighs; and when they are obliged to move, carry the eggs in that position. They feed on fish, and mollusca or soft animals; their flesh, in common with that of the Auk, Puffin, and Diver, is unfit for food, being very tough and rank. In the Patagonian or King Penguin, the head and throat are black, the back bluish grey, the under parts silvery white, with a yellow band across the upper part of the breast. The Crested Penguin has a plume of short feathers on the top of its head, but resembles the others in its general form and habits.

Longipennes.

The Longipennial family, are distinguished by the



length and power of the wings. It includes the Albatross, Petrel, Gull, and Tern or Sea-swallow. The Albatross is a very large bird, found in the Antarctic Seas. It is a voracious bird, devouring such large quantities of food as to be unable to fly when pursued by a boat. Its flesh is tough and disagreeable. This bird is migratory, being frequently seen in large numbers on the coast of North-eastern Asia. The natives of Kamtschatka, take this bird by means of a fish attached to a hook, which it swallows greedily. They make buoys for their nests, by blowing the intestines, and use the long, hollow, bones of the wings for tobacco pipes. The upper part of the plumage is grey, the under parts white; the beak is hooked at the tip and is very powerful. Like the Petrels, this bird is furnished with a passage from the stomach, through which it ejects or squirts an oily fluid.

The Stormy Petrel is a well-known bird, whose home is the stormy sea. It is seldom seen near land, except at the time of laying and hatching its eggs. It feeds on small fish, and molluscous animals. It is called by sailors Mother Carey's chicken, and is by them much disliked, as they believe that the appearance of it foretels a storm. They are furnished with a curious means of defence, having only one nostril which communicates with the stomach: in the stomach is formed an oily fluid, which by means of the passage from the stomach can be squirted out suddenly in the face of any person who takes hold of the bird. Besides the Stormy, there are several other Petrels; all however agree in general habits and appearance. The Petrel is so full of oil, that the natives of the Faroe and other northern islands, make lamps of the bodies by simply drawing a wick of cotton through them.

The Gull is common on our own shores, and in most parts of the world. Its habits are like most of this family. It skims over the waters, feeding on fish, and

frequently visits ploughed land, looking for insects, &c. One species, the Blackheaded Gull was formerly considered a delicacy while young, and is still brought to market. The Gull swims on the water, but does not dive.

The Terns resemble the Gulls in general habits and form, only having the tail longer. They are sometimes called Sea-swallows, from their habits of skimming over the waves, watching for their finny prey. There is one very curious Tern, called the Scizzors Bill; it has the lower mandible of the bill an inch longer than the upper, and with the point of the lower dipped in the water, skims over it for miles, preying on fish, mollusca, insects, &c. The Scizzors Bill frequents the coasts of Africa, Asia, and America. Its color is dark brown above, under parts white.

Totipalmatæ

The Third family of this Order, called Totipalmatæ includes those birds which have a web covering the whole foot, stretching over the hinder toe, as well as those in front, and thereby giving them greater power in swimming. This family includes the Pelican, Cormorant, Solan Goose, and the Darter. They are all able to perch, though so completely webbed, and can fly with great rapidity, and to a great distance; the aircells are very large, and the birds are consequently light. The skin of the throat and lower mandible, is very dilatable, forming a pouch, larger in some species than in others.

The Pelican is well-known by the large size of its throat-pouch. It has the bill long, straight, broad, and flattened. The body is large-sized and the legs short. It is a native of South Europe, Africa, and Asia, feeds on fish, which it often deposits in its pouch while fishing, to feed upon at its leisure, and to carry to its young or mate. Its color is white, with a tinge of straw color.

The Cormorant has a much smaller pouch than the Pelican. It is a native of all four quarters of the globe, and has an insatiable appetite for fish. It is a clever fisher, and in China, is kept tame, and with a ring round its neck to hinder it from swallowing, it procures a sufficient number of fish to supply a family with food. After fishing for some time, they have the rings taken off, and a part of the prey given them as a reward. This bird is of a greenish black color, with white feathers on the neck, and a white band on the breast.

The Darters are remarkable for the length and thinness of the neck and for their mode of swimming, having only the head and neck above water. When they take a large fish, they perch on a tree to feed upon it. The Gannet or Solan Goose is migratory, and abounds in most of the north parts of the British Islands, feeding on herrings and other fish, which it takes by diving. It was formerly caught, by placing a fish on a board under water; the Gannet would dive from a great height, and striking its bill into the wood, dislocate its neck.

Lamellirostri

The Fourth and last family of web-footed birds is called Lamellirostres, or plated-billed birds. This family is distinguished by the flatness of the bill, which is also covered with a tough skin, and having a nail-like point on the upper mandible. The feet are webbed, but the hind toe is free. The gizzard is large. These birds are widely spread, inhabiting almost all countries. This family includes the Swan, Goose, Duck, and Merganser. The Swan, Goose, and Duck, are well known English birds.

The Swan is the largest of these, and is found on most of the principal estates and manors of this country. It was formerly thought much of, as a dainty dish at a feast, but has now fallen into disuse. There are several species, all nearly alike in habits, one of

the handsomest of which is the Black Swan of Australia. The short feathers and down of all the White Swans, is valuable, for tippets, &c., large quantities of it are collected in Iceland and other islands, where the Wild Swan abounds great part of the year.

The Goose is a valuable English bird, found in most farm-yards. Its flesh furnishes an excellent dish for the table, and its feathers make good beds. Of this bird there are many species, differing only in a slight degree. The Canada Goose furnishes winter food for many thousands of people in North America, where it is abundant. The Egyptian Goose was held sacred by the old inhabitants of that country. It is of remarkable beauty, and is much valued as an ornament to parks containing water.

The Bernicle Goose is only remarkable as being a bird about which many fables have been written. It was formerly believed to have been produced from old masts, spars, &c. produced from wrecks. "When a mast or any part of an old ship rots at sea, something like a little fungus makes its appearance, which at length puts on the manifest appearance of birds; afterwards these are clothed with feathers, and become living and flying fowl." The origin of this absurd notion has not been clearly ascertained.

The Ducks are smaller than the Geese, but in their habits they resemble each other. The Common Duck is well known. The most remarkable are the Eider Duck, the Mallard or Wild Duck, Mandarin, Summer Duck, and Teal.

The Eider Duck is found in the Northern Regions, and is valuable for the light down which it furnishes; this down is procured, not from the dead birds, but from the nests, of which it forms the lining. It is stripped from the breast of the living bird, by the bird itself, to line the nest.

The Mallard or Wild Duck so common in many



parts of England, where it is valuable for the sake of its flesh. It is caught in great numbers in the fens of Lincolnshire, and sent to the London markets. It is the species from which we get our tame Duck.

The Mandarin is a native of China, and is a very beautiful Bird. They live in pairs all their lifetime.

The Summer Duck, also very beautiful, is a native of America. It breeds freely in this country, and forms a splendid addition to the waterfowl tribe.

The Mergansers are natives of the colder seas. They feed on small fish and aquatic insects, procured by diving. The tribe includes the Goosander and the Smew. The Goosander is found in most north seas. The male has a thick tuft or plume on the head, the head back, and neck black, and under parts pinky white.

The Smew is smaller than the Goosander, but resembles it in habits and distribution.

CLASS REPTILIA OR REPTILES.

This Class is composed of Coldblooded Animals, differing materially in many respects, but agreeing in others sufficiently to warrant Naturalists in classing them together. They are likewise slow in their motions, and are not so perceptible of feeling as the animals of the First and Second Classes. The principal cause for the coldness of the blood, is the form and position of the heart and lungs; they are so situated that the blood circulates slowly, and consequently, is not so completely purified by the oxygen of the air, as in Mammalia and Birds. As a proof of their perceptibility of feeling not being so acute as in some other animals, a Tortoise has been known to live eighteen days after being deprived of its brain; a Salamander or Eft lived several months with a cord so tight round its neck as almost to cut off its head. The heart of a Viper will move after being taken from its body some hours. Most animals of this class can suspend their breathing for a long time, the blood at the same time circulating as usual. During cold weather, frogs, toads, and many others will bury themselves in mud at the bottom of water, in a half-torpid state.

Reptiles, are with few exceptions, carnivorous, feeding on insects among the smaller tribes, and among the larger on various animals. The young are produced from eggs, which are usually hatched by the heat of the sun, the parent seldom shewing much anxiety about them. In most tribes teeth of various kinds are present; but among the Tortoises the gums are so hard and sharp as to stand instead of teeth. The teeth of some of the Lizards grow on the jaw, of which they form a part and not in sockets as in Mammalia. Many are pro-

vided with hollow teeth called fangs, by means of which a poisonous secretion is introduced into the blood of any animal which they may pierce. Reptiles abound most in tropical regions; such climates being most suitable for their organization. Nearly all have the faculty of lying torpid during severe weather.

The Class Reptilia is divided into Four Orders, which are as follows; viz:—Chelonia, or Tortoises; Sauria, or Lizards; Ophidia, or Serpents; and Batrachia, or Frog-like Animals.


ORDER CHELONIA.

The First called Chelonia, (from *chelys*, a tortoise,) includes the Tortoise, which is the type of the Order. Tortoises are divided into Land Tortoises, Freshwater Tortoises, and Marine Tortoises or Turtles, which inhabit the salt water, and contain a great number of varieties. The Land Tortoises have very thick club-shaped feet, and shells very much more convex or rounded than the Water Tortoises, which are broader in proportion to their size, probably to enable them to move in the water with more ease. The Land Tortoises feed chiefly on vegetable substances, and as winter comes on, when their food would be scarce, are endowed with a power of lying torpid, till warm weather again tempts them forth. Their eggs are in shape like a globe, and when laid they are hidden in the mould, and hatched by the warmth of the sun's rays. Among the Land Tortoises, we may mention the Common Tortoise, found in the North of Africa, and the South of Europe; and the Tabular Tortoise, from Brazil, in South America. Their flesh is considered good for food by some nations, and they are often used by American and other sailors as food. They are found in great abundance in the Gallapagos Islands, near the Equator, off the Western coast of South America. The Common Tortoise lives to a great age, instances hav-

ing occurred in this country, where individuals have lived upwards of 100 years. One introduced into the garden of the Archbishop of Canterbury's Palace, at Lambeth, in the year 1663, lived until the year 1753. Another was known to have lived at Fulham, in Middlesex, in the garden of the Bishop of London's Palace, nearly as long a time. It has been thought curious, that the Tortoise covered with a shell of such strength, that a light waggon passing over it, would not injure it, should be alarmed by the approach of a shower of rain. That such is the case however, has been asserted by the Rev. Gilbert White, in his excellent Natural History of Selborne, who says, "no part of its behaviour struck me more than the extreme timidity which it expresses with regard to rain; for though it has a shell, which would secure it against the wheel of a loaded cart, yet does it discover as much solicitude about rain, as a lady dressed in her best attire; shuffling away on the first sprinkling, and running its head up into a corner."

The Fresh Water Tortoises differ from these we have noticed, in having the shell more flattened, the feet more expanded, and webbed between the toes, which are furnished with sharp claws. They are strictly carnivorous, and devour their food in the water, and many of them may be seen in the East Indies where they abound, preying on human bodies, as they float down the Ganges. Some of this division of the Order Chelonia, as the Banded Terrapin, and Lake Erie Terrapin, are common in North America, and are much used and valued as food.

The Marine Tortoises or Turtles, differ from the others, in having the feet flattened and shaped like fins. This family includes the Imbricated Turtle, Green Turtle, and Luth of the Mediterranean. They live chiefly on vegetables, found at the bottom of the sea, and on the coasts which they frequent. It is this kind of Tortoise which is most commonly used as food,



the flesh being considered a great delicacy, by those rich enough to procure it. The most valued of the species as an article of food is the Green Turtle, (*Testudo Midas*,) found on the Island of Ascension, in the Southern Atlantic Ocean. Great numbers of this species are brought to England, to be made into soup, and as the mode of taking them is curious, we may just notice it. From the shortness of the legs, when a Turtle is turned on its back, it cannot reach the ground, and therefore cannot recover itself; this is taken advantage of, by those who take them, and they are secured while sleeping on the sands, by being thus turned over, till a sufficient number is taken, when they are removed on board ship. Some species afford good tortoiseshell; the best is procured from the Imbricated Turtle, which is found in the warmer seas, near Arabia. Another species is the Coriaceous or Leathery Turtle, sometimes seen on our own coasts.

ORDER SAURIA.

The Second Order of the Class Reptilia is called Sauria or Lizard-like animals, (from *saura*, a Lizard.) The animals of this order vary much in size, but agree in their general formation. They have generally a long round body, with four legs, a long tail thick at the base, and gradually tapering towards the end. They are in most cases, covered with horny plates or scales, which vary much in shape, as well as in size and thickness, according to the size of the animal. Some of them have the tongue united to the lower jaws, and whole; others have the tongue free, and more or less forked. The jaws are usually well supplied with teeth, always pointed, thus enabling them to seize and hold their prey, which in all cases is swallowed whole.

The largest animals of this order are the Crocodiles and Alligators. The Crocodile is found both in Asia, Africa, and America, but the Alligator is found only

in America. The Crocodile is furnished with a long head, well armed with pointed teeth; the feet are webbed between the toes; the nostrils supplied with valves to keep out the water; and the tongue fixed to the lower jaw by means of a thick membrane, so that it cannot be protruded beyond the end of the jaw. Crocodiles abound in the River Nile, in Egypt, and the other countries through which it runs, and were formerly held sacred by the idolatrous natives, who fed many and placed them under the care of priests, whose business was to see them carefully attended to, and provided for. They are carnivorous, preying on smaller animals generally, but sometimes, impelled by hunger, they have been known to attack large animals, as the cow, &c.

The Gavial of India, only differs from the Crocodile, in having the head longer, and more slender.

The Alligator, found only in America, differs from the Crocodile, in not having the feet webbed, the toes being free; it inhabits the large rivers and creeks of America, lying at the top of the water, and when lying asleep on the banks, may be easily mistaken for a log of wood, the color being similar. The whole of these animals lay their eggs in the sand or earth, leaving them to be hatched by the heat of the sun's rays. Many of them thus left, are devoured by the Ichneumon in Africa, and Vultures in America. The young Crocodiles and Alligators find their way into the water, as soon as they are out of the shell.

The next family is that of the Monitors, found in most countries inhabited by the Crocodiles. They live in or near marshy places, generally by the side of rivers, and take their name from the fact that the natives suppose them to give warning of the approach of the Crocodile. They draw the tongue into a sheath under the gullet when at rest, thereby differing from the *Safeguards of America*, and the true *Lizards of the*

Old World, which have tongues simply contractile. The same idea is entertained of the Safeguard in America, as of the Monitor in Africa, and other parts of the Old World, viz.: that they give notice by hissing on the approach of the Crocodile or Alligator. Among what are called the True Lizards, we may notice the Green Lizard, found in Europe, and the Wall Lizard, found on warm heaths and old banks near London. Most of these Lizards have the faculty of reproducing the tail when broken off, though the renewed tail has instead of bone in the centre, a kind of cartilage or gristle, and in many cases the scales are different from those on other parts of the body. If the tail be only cracked and not thrown off entirely, a new tail will often spring from such crack, and thus the Lizard, will be favored with two tails; a specimen of such Lizard, we believe, may be seen in the British Museum. The next family of this order are called Guanas, and are known by their short contractile tongues, slightly notched at the point. Some of the species, as the Common Guana and the Banded Guana have a kind of pouch or dew-lap under the throat, and the back elevated and crested. The Common Guana is found in Jamaica, where it is valued as an article of food. All the Guanas are confined to the New World. They are very quarrelsome, and fight with fury, whenever they meet.

We must now notice the Nocturnal Lizards, called Geckos, which are of a dull color generally, head flattened, eyes large and round. The feet are so formed, that the Gecko is enabled to climb up the smoothest surfaces, even of glass, and to run with the back downwards along a ceiling, in pursuit of a fly or other insect, which it secures by thrusting out its tongue. They are common in all parts of the world, and are believed to be harmless, though among the natives of India, they are considered to be poisonous. They are divided into many groups, the most remarkable of which:

are, the Smooth Sheathclaw Gecko, which when caught by the tail, often casts it off, in its efforts to escape. It will likewise do so on being thrown alive into spirits, when the tail curls up, and assumes almost a round shape, whence this Lizard has been sometimes called the Turnip-tailed Gecko. Also another species called Horsfield's Gecko, found in the ponds and marshes of Java, in the East Indies, which has the skin on the sides of the body, limbs, and tail, enlarged into a kind of fin.

Another family of Lizards are called Agamæ. They are all distinguished by having spines either singly or in bundles arranged in various parts of the body, and in most species large pouches under the throat; they are divided into a number of groups, according to the number and position of such spines. The most remarkable of the Agamæ, are the Draco, or Dragon, and the Frilled Lizard of Australia. The Dragon is a native of India, and is remarkable for having the sides of the body spread out into a thick membrane, which, when the Lizard leaps from tree to tree, serves the purpose of a parachute. The Frilled Lizard has a large frill round its neck, which it can elevate or depress at pleasure, looking when elevated, like a starched ruff of the time of the Tudors.

But one of the most noted of the Lizard tribe is the Chameleon, of which many fabulous tales have been related, as to its changing color, and taking the color of anything on which it might be placed. It is usually, when at rest, of a dark brown color, but when excited or irritated, the color changes to different shades of green, the design of which appears to be, to make the animal's color, agree with that of the leaves of the trees which it inhabits. They are provided with a very long extensile tongue, at the end of which is a thick lobe or knob, which is covered with a slimy substance; when the Chameleon sees an insect, this tongue is darted out

with an unerring aim, and the insect is secured by sticking to the end of the tongue. They are confined to the warmer parts of the Old World, not being found in any part of America.

The last family we have to notice is that of the Snake Lizards, so called from their resemblance to Snakes in their formation, some being entirely destitute of legs, and others have only a very feeble development. They are divided into several groups. The Zonuri have four legs and the ears shewn. The Glass-snakes of America are quite destitute of legs. The Bimanæ of Mexico have two short forelegs. The Amphisbœnæ differ from them in having no legs, and in both ends of the body being of the same thickness; whence it has been thought that they move backwards or forwards with equal ease. The Blindworms of New Holland, have only the rudiments of legs, concealed beneath the skin.

ORDER OPHIDIA.

The Third Order of Reptiles is called Ophidia, (from ophis, a serpent,) and includes animals entirely destitute of legs, with mouths capable of such extraordinary dilatation or opening, that they can swallow bodies of a very large size. This is caused by the peculiar manner in which the lower jaw is attached to the skull. Though this order consists of very many varieties, but few are known to be poisonous. Those which are known to be poisonous, vary in the extent of their venomous qualities. The greater number are found in tropical countries, few being known to exist in cold countries. We shall first notice those which are peculiarly poisonous, commencing with the Rattlesnakes. These in common with all other venomous snakes, have two large moveable fangs in the upper jaws, on the convex side of which two grooves or passages open at the lower or sharp end; these grooves convey the poison from a small sponge-like gland at the root of

the tooth, into any wound inflicted by the serpent ; and as the blood circulates, the poison circulates with it, producing death in some cases in an amazingly short time.

The Rattlesnake may be ranked among the most venomous of snakes, and is known by the bones at the end of the tail, which being hard, and linked one within another, make a rattling noise when the snake is irritated. The Rattlesnake is peculiar to America, in some parts of which country, they abound. We would here mention that the most deadly poisonous of the Rattlesnakes, may be known also by a large pit beneath the eye, on each cheek. Many anecdotes are related of the intensity of the venom of these snakes, one only, of which we can mention. Previously, however, it may be remarked that the poison of snakes, taken inwardly is generally harmless, and to prove fatal, it must be, by some means mixed with the blood. This, though at first sight curious, is not so much to be wondered at, when we remember that milk, so much of which is drank with good effect, is a virulent poison if mixed and circulated with the blood. Some years ago, Captain Hall, desirous of ascertaining the precise degree of intensity in the poison of Rattlesnakes, and the different effect of bites in different parts of the body, tied one down on a grass plot, and caused it to bite a healthy cur dog, immediately afterwards the poor animal's eyes were fixed, his teeth closed upon his tongue, which was hanging out, his lips were drawn up so as to leave his teeth and gums bare, and in a quarter of a minute he was dead. The hair was then scalded off with hot water, only one small puncture could be seen, between his forelegs, with a bluish-green color round it. Half an hour afterwards another dog was bitten by the snake in the ear, he exhibited signs of violent sickness, staggering, and convulsions, but lived nearly two hours. Four days after, two dogs, of the size of


bulldogs, were bitten by the same snake; the one in the inside of the left thigh, which died in exactly half a minute; and the other on the outside of the thigh, which lived four minutes. After some other experiments, Captain Hall, wished to try whether its poison would injure itself. He, therefore, hung it up in such a manner, that about half its length was on the ground, and irritated it, by two needles fastened to the end of a stick. The animal made several attempts to bite the stick, and at last bit itself. It was let down, and in eight or ten minutes was found to be dead. It was afterwards cut into five pieces, which were successively devoured by a hog, without injury.

The Vipers have the broad head of the Rattlesnakes, but they have no pit before the eyes. The most remarkable of these are the Nosehorned Viper, peculiar for two horns on the end of the nose; and the Puff Adder, of the Cape of Good Hope, commonly called the Short-tailed Viper, whose bite proves fatal, in a few hours.

The Adders have the head covered with small grain-like scales. The Common Adder, known by three large scales on the crown, inserted among the smaller ones, is the only dangerously poisonous reptile found in Great Britain. The Cylindrical Snakes differ from other venomous snakes, by the head being so much smaller, scarcely as broad as the body, having no pits before the eyes, and covered with large regular plate-like scales. The most venomous of these snakes is the Spectacle Snake or Naja, of the warmer parts of Asia, so called from the mark on the back of the head, which somewhat resembles a pair of spectacles. These Snakes have the power of puffing out the neck, by extending the ribs, so as to form a large hood, whence they are commonly called Cobra Capellos or Hooded Snakes. These Snakes are carried about by the conjurors and jugglers of India, who teach them to dance, to a kind

of flute or flageolet, having of course previously taken out their fangs. They are also used by the Snake Charmers, who, in their rambles, hearing of a house, infested by one of these dangerous reptiles, offer, for a small sum, to charm it away. This offer being accepted they find means to introduce one of their tame snakes into some part of their house, and after various mutterings and incantations, commence playing on their flutes, which of course attracts the tame snake from the hole, which after amusing itself awhile, glides into the basket, previously set open ready to receive it, the charmer pockets his reward and moves on his pilgrimage. Such things, however, are becoming much more rare, the trick having been several times discovered by Europeans, and the deceit exposed on the spot, by examining the mouth of the snake. But perhaps one of the most venomous kinds of serpents, and from its diminutive size, the most dangerous, is the Whip Snake of India and other Eastern countries. This Snake when quiet, may easily be taken for a whip, its form bearing a considerable resemblance to the thong of a whip, without a handle, and it is related in some of the old books on Natural History, that one of the Roman Catholic Missionaries, during his Mission to the East, on entering an Indian Pagoda or temple, took hold of one that was lying on the floor, supposing it to have been a whip thong; fortunately he held it by the head, so that the worst it could do was to twist round his arm, in which position he held it, till it was killed by persons who came to his assistance.

Another species of snake, found in Asia, is the Coral Snake, similar to the Cobras in form, except that they have no hood. Many of them are marked with black and crimson, with other bright colored bands. They are in the habit of visiting the seas, where they may be seen swimming near the bottom, with as much apparent ease, as if they were moving in the open air. This,



however, is frequently known to occur among snakes generally; nearly all seeming to be fond of visiting the water, in which, many of them doubtless, find an abundance of food, as well as refreshment, during the scorching heats, to which the countries they chiefly inhabit are exposed.

We must now notice the Snakes which if not entirely innocent, are seldom found to be dangerous. They differ from those we have noticed, in having a regular row of teeth in the upper jaw; the poisonous snakes having only two large poison fangs; they have likewise broad scales on the under side of the body, and long conical tails. This division includes a very large number of different varieties, a few of the principal of which we shall notice. The largest is called the Boa Constrictor, found both in Asia and America, and sometimes growing to the enormous length of fifty feet. They are furnished with two short crooked spurs at the base of the tail, which have been thought to agree with the hinder legs of other reptiles. They are not venomous, destroying their prey by crushing it in the folds of their enormous bodies, generally at the same time twisting the end of the tail round a tree, to increase their power. The largest are found in the swampy regions of South America, where they often lie hidden beneath the water till some animal comes to drink, when rising suddenly, they envelope the poor animal in their folds, and crush it to death; after which they lick it over, covering it with a slimy saliva or spittle, before they swallow it. The Boas, in common with most other Snakes, swallow bodies much thicker than their own; but after their repast, they are for some time overcome with torpor, at which time they are safely approached and easily killed. In some parts of South America their flesh is eaten by the natives, and great quantities of oil are procured from their bodies, which is useful in medicinal operations.

In a letter inserted in a German periodical, some years ago, it was related by a person who declared himself to have been an eye-witness of the fact, that a Boa Constrictor, winding its tail round the trunk of a tree, had seized a Buffalo, which though an animal of great strength, could not escape, and in the course of a short time having broken all the large bones of the animal's body, proceeded to cover it with its saliva, and afterwards to swallow it.

The Sea Snakes are ranked among the harmless, though many of them have fangs, mixed with the true teeth; they are easily known by their flattened form, and the vertically flattened tail. They are found in all the Indian Seas, and also near New Holland. Another species of Snake, and one of which most use can be made, is the Black Snake of North America, whose bite is perfectly harmless. These Snakes are valued by many of the Americans for their habits of devouring rats, mice, and other troublesome animals. In many of the houses they are found perfectly tame, and some travellers relate that they have seen the Black Snake eating milk out of the same bason with a family of little children, and often receiving a rap on the head with the spoon for being too greedy, without showing the least disposition to bite any of them. In their wild state they feed on birds and small animals, which they find in the woods and forests; they lie torpid during the cold weather, like most other reptiles, and many of them are found during that time, knotted together, probably for warmth. Their young are produced from eggs, which they lay either in a dunghill or some other place, the warmth of which would be sufficient to hatch them. They are very fond of milk, cream, and eggs: the farmers' wives have great reason to complain of their gliding into the dairies, and licking off the cream from the pans of milk; also of their visiting the hens, while sitting on their eggs, when

they will often destroy all the eggs, and afterwards coil themselves up under the hen. They are remarkably swift runners, and it is said they will follow a person, wind round him, and give him a bite, with perhaps a great fright, and immediately run off as fast as they can.

ORDER BATRACHIA.

The Fourth Order of Reptiles is called Batrachia or Frog-like Animals, (from *batrachos*, a frog): it includes Frogs, Toads, Efts or Newts, and Sirens. These reptiles differ from the others in having the skin entirely naked, and the toes without nails. Some of them have, in common with the Lizard tribe, the power of changing color more or less. The young are produced from egg-like spawn, which must be laid in the water till hatched. They are, when first hatched, called Tadpoles, being provided with a long tail, round head, and small tuft-like branches on the side of the head, through which they breathe until the lungs and other viscera are formed. Some of these animals are provided with both lungs and gills, as the *Proteus* and *Siren*. These are believed to be the only true Amphibia, as they can at all times breathe either on land or in water. As the changes of the Batrachian before it arrives at perfection are interesting, we will just notice them. Within the egg, when first produced, may be seen a small black speck, which keeps increasing till the covering bursts and the Tadpole appears. After remaining for about a month in the Tadpole state, the hind legs appear; soon after the fore-legs are free, the tail disappears, and the Tadpole is changed into a living Frog, Toad, or Newt. In the early part of the Tadpole state, it breathes through the tufts on the head, but soon after the tufts fall off, and gills appear, when the young Batrachian very much resembles a fish, the tail being flattened and provided with a fin.


When the tail disappears, the gills close, and the lungs are made use of. The Tadpole feeds on any animal substance which may be lying in the water, but the perfect animal only feeds on living prey, such as insects.

The Frog produces its Eggs in a large mass, feeds on insects, and frequents marshes, spending much of its time in the water. It has the power of changing its color at certain seasons, and is usually much brighter in color during summer than winter. This tribe includes several varieties, the Green Frog, Tree Frog, Bull Frog, Whitefaced Horned Frog, and the Jacky or Paradoxical Frog.

The Green Frog is common in Europe, especially in France and Germany. It is of a green color, with three yellow rays on its back, and spotted with black. This Frog is valued as food in some countries. In France only the hind legs are eaten, but in Germany the whole, except the skin and intestines. They are fattened in pits formed for the purpose, called Froggeries. A strange notion was formerly entertained respecting young Frogs, viz., that to swallow one was a good means of cleansing the stomach.

The Tree Frog is found in the south of Europe, frequenting rivers and marshy countries. They may be known by the length of the hind legs, and having the ends of the toes broad, enabling them to climb. It is more active than other Frogs and leaps to a great distance; it is also able to cling by its hind feet to the branches of trees, dropping thence on insects which may be on the water, over which the tree hangs. Frogs as well as Serpents, cast their skins annually; the skin of the Frog, however, does not come off all in one piece, but in shreds or tatters. The Tree Frog is said to swallow its skin, as soon as it is cast off,

The White-faced Horned Frog, is found in South America. It is remarkable for the extension of the



skin, over the eyebrows, which gives it the appearance of horns. Very little is known of its habits. There are several others of this Horned kind, all resembling each other in their general form.

The Bull Frog is the largest of the tribe. It inhabits North America, in some parts of which, it is common. They are protected by the natives, who believe that they purify the springs and wells. They receive their name from the noise they make, which resembles the bellowing of a bull a long way off. The Bull Frog is about nine inches long, the common Frog about three inches, showing the comparative sizes.

The most curious of the Frog tribe is the Jacky, the Tadpole of which is larger than the perfect Frog. This Frog is found in the warmest parts of South America, and was for some time thought by Naturalists to differ from all others, in changing from a Frog to a Tadpole, instead of the usual change from a Tadpole to a Frog. It is now, however, well known that the Tadpole is covered with such an immense tail, and other appendages, that when they drop off, the perfect animal appears less than when in the Tadpole state.

The Toads differ from the Frog tribe, in being covered with warts, more clumsy and slow in their motions, and in seldom going into the water, except to lay their spawn. They do not leap so well as the Frog, but crawl usually. They have a thick pad behind the ears, from which at certain times they throw out a milky sort of humour, which has been thought wrongly to be poisonous. They lie torpid during winter, in holes in the ground, or in buildings, and some of them have actually been found alive and buried in the heart of a tree, and in blocks of stone.

The Common Toad of this country is well known; it is much disliked and often treated with great cruelty, chiefly on account of its disgusting appearance, and from the tales so commonly believed of its spitting poi-

son, when irritated. In other countries toads are thought more of; in Africa, and in some of the districts of South America, the Negroes eat them. They are also said to be sold instead of Frogs, in some of the French markets, so that many persons have doubtless eaten them without knowing it.

The Obstetric Toad, found in some parts of France, carries its eggs about till the Tadpole is almost ready to come from the egg, when the Toad seeks some stagnant water to place them in, when they immediately burst the egg, and swim forth. This Toad is small, of a light color, with black spots on its back. It frequents stony places. But among the most remarkable of the tribe are the Brazilian Toad, and the Pipa of America. The Brazilian Toad is large, and has the upper eyelid prolonged, and covered with warts. It is a hideous animal, but is not to be compared for its ugliness, with the Pipa. When the Pipa has laid the eggs or spawn, the male Pipa places it on her back, when she goes direct into the water. Soon after, the skin appears to swell up, burying the eggs beneath it; it then lies in little projections. In this state the egg undergoes the usual changes, and when the young Toad is perfect, it bursts the filmy covering, and leaves its parent. The Pipa likewise distils a liquid from its body, which is said to blister the skin when touched by it. The use of this liquid is not exactly known.

The Efts or Newts, the largest of which is the Salamander, have bodies somewhat resembling those of the Lizard tribes, with four legs and a long tail. They agree with the rest of the Batrachians in their habits, and in the various changes which they undergo.

The Salamander is common in some parts of the south of Europe, and found both on land and in water. It was formerly supposed, that a liquor distilled from its body was sufficiently powerful to put out the most intensely heated fire, and to preserve the animal from

its effects. This idea was of course a wrong one, the animal possessing a row of glands on each side of its body, from which it throws out a fluid to about three inches distance. This fluid is said to be poisonous to the small animals on which it feeds, such as worms and insects, but is nearly or quite harmless to larger animals. These animals have a remarkable power of reproducing any limb of which they may have been deprived; they have also been packed in ice for a long time without injury. The Common Eft or Newt is common in this country, and in most parts of Europe. There are two species, the Land Eft and Water Eft, resembling each other in form and habits.

We have to conclude our notice of the Reptile Class, by noticing the Proteus and the Siren, two of the most curious animals of the Order Batrachia. The Proteus, found only in the subterranean waters of the caverns of Carniola, in Hungary, is about the thickness of a man's finger, thirteen inches in length, and having four very small limbs. It is of a pale pink color, and blushes when exposed to the light; in its native state it avoids the light; its eyes are nearly hidden by the skin, and are extremely small.

The Siren is a native of Carolina, in North America, and has only two short legs in the front of the body, in other respects resembling an eel. These animals retain the gills as well as lungs all their lives, and are consequently thought to be the only true amphibia, living equally well on land or in water.

CLASS PISCES OR FISHES.

The Fourth Class of Backboned Animals, is called *Pisces* or *Fishes*, (from the Latin word *piscis*, a fish). It includes all those animals, which, inhabiting water, are covered with scales generally, are coldblooded, and breathe through gills instead of lungs. In common with *Mammalia* and *Birds*, fishes have a double circulation; though, as the air they breathe is obliged to be separated from the water, by means of the gills, very little oxygen is absorbed by the blood, and consequently they are coldblooded. They are oviparous, that is, the young are produced from eggs. As the animals of this class require to move quickly in the water, their bodies are in general slender and thin, flattened at the sides, and always somewhat pointed at the head. They are thus enabled to cut their way through the water. Fishes are nearly of the same specific gravity as water, and swim by means of their fins and tail. The strength of the tail is great, and by means of its motion from side to side, they are enabled to move in a direct line. By opposing the tail to the water, they are enabled to turn round with rapidity. The fins of a fish keep it upright, especially the belly fins, which are of the same use to it as the feet to other animals. Besides the fins, fishes are provided with an air bladder, by pressing on which, they force out a portion of the air, become heavier than their own bulk of water, and consequently sink. When they require to rise in the water, they take in a greater portion of air, by which means the air bladder is dilated or swelled, the body becomes lighter than its own bulk of water, and the fish rises accordingly.

The most obvious instances of design in the general

formation of this Class, may be seen in the adaptation of their bodies for swift and easy motion, through the element which they inhabit;—in the position of the teeth, which are frequently turned backwards towards the throat, thereby enabling them to hold their slippery prey;—and in the position of the scales and fins, which are invariably turned backwards, so as to offer no resistance to the water.

Fishes are divided into Two Divisions, called Osseous or Bony Fish, and Cartilaginous or Grisly Fish, each of which is again subdivided into Orders.

The Animals of the First, or Bony Division, are known by the skeleton, which is formed of articulations or joints, and contains a considerable portion of Phosphate of Lime. Those of the Second, or Grisly Division, have a skeleton, formed in one entire piece, containing little Phosphate of Lime, and therefore comparatively soft.

The First Division is divided into Six Orders, which are named and described according to the form and position of the fins, and shape of the jaws. They are named as follows; viz. Acanthopterygii, or thorny rayed; Malacopterygii Abdominales, or Soft-rayed with ventral fins behind the pectoral; Malacopterygii Subbranchiati, or Soft-rayed with ventral fins, before the pectoral; Malacopterygii Apodes, Soft-rayed, without ventral fins; Lophobranchi, or Tufted Gilled; Plecognathi, or Cheek-joined.

The Second Division is divided into Two Orders, which are thus named; First, Chondropterygii branchiis liberis, or Grisly free-gilled Fish; Second, Chondropterygii branchiis fixis, or Grisly fixed-gilled Fish.

ORDER ACANTHOPTERYGII.

We shall now proceed to notice some of the Fishes of each Order, and accordingly commence with the First Order of the bony Fish, called Acanthopterygii, or

thorny-rayed, (from *acantha*, a thorn) This Order includes the Perch, which is the type of the Order ; the Sword-fish, Gurnard, Mullet, and Mackerel. The most remarkable Fish of this Order is the Sword-fish, so called from its having the upper jaw so much produced or lengthened, as to form a long sword-like bone, which is a formidable weapon when used by the Fish, either in attack or defence ; this Fish, is found in the seas of the most warm climates, but is not very common. A specimen of the sword may be seen in the British Museum, in London, with a portion of a ship's side; through which it had pierced, and been broken off in the operation. The Perch is a small Fish, found in most of our fish-ponds and rivers.

The Blenny, has a slimy skin, a blunt head, and the fins rather softer than the rest of the Order. Many of them are viviparous, producing two or three hundred at a time. One of this species is called the Wolf-fish, differing from the rest in the form of the teeth, which are very large and tubercular, or conical. They are found in the northern seas, of a large size, sometimes growing to the length of seven feet. It is most voracious, in its appetite, and fierce in its habits, and will seize hold of anything within reach ; whence it derives its name. It feeds on shell-fish, which it is enabled to crush with ease, from the great strength of its jaws. Its appearance is so disagreeable, that little can be made of it when caught, only the fishermen being able to eat it. The gall of the Wolf-fish is used as soap by the inhabitants of Iceland, who compare its flesh to that of the eel.

The Mackerel is well known as a table fish in England and other parts of the kingdom ; it is caught in great numbers on our own coasts, at certain seasons of the year by means of nets.

The Gurnard, remarkable for its large spiny-rayed fins, is found on the coasts of Europe. A variety of

this fish, called the Flying Gurnard, has the pectoral fins so large, as to be able to support itself a short time in the air.

ORDER MALACOPTERYGII ABDOMINALES.

The Second Order of this Division is called Malacopterygii Abdominales, (from malakos, soft; pteryx, a fin; and abdomen, the belly). It includes all those soft-finned bony fish, which have the ventral or abdominal fins behind the pectoral. The fishes forming this Order are the Carp, the type of the Order, the Salmon, Pike, Trout, Flying-fish, and Herring. The Carp family, which includes several freshwater fish, as the Tench, Bream, Barbel, and Loach, are generally weak in the jaw, toothless except in the palate, and feed on water plants.

The Salmon family among the largest sized fish of this Order, furnish our tables with one of its greatest delicacies. They ascend rivers at certain seasons to spawn. In their appetites they are voracious, feeding on insects and small animals. They abound in many of the rivers of the United Kingdom; the fish of certain rivers or lakes being preferred for the delicacy of the flesh; these are generally known by their spotted bodies.

Another family is that of the Pike, a very voracious fish, having the head very much lengthened, the jaws slender, and very full of teeth. They live on smaller fish, to which they are great tyrants, little fish appearing to hold them in the same light, that small birds do the hawk, swimming round them when lying asleep in the water, in the same manner that birds may be seen flying round a hawk. Many instances are related of their extreme voracity, one having been choaked in trying to swallow a large fish of its own species; and another is mentioned as having seized the head of a swan, while it was feeding under the water, and gorged

so much of it, as to kill both pike and swan. The Garpike is one of this species, found in numbers on our coasts, just before the shoals of mackerel arrive; it may be known from all others, by the backbone, which turns a bright green when the fish is boiled. They grow to the length of three feet, and from the length and thickness of the jaws, are sometimes called Horn-fish.

The Flying Fish, which forms one of the Pike family, is one of the most remarkable fishes of this order. This fish inhabits the seas of warm and temperate climates, and is peculiar for the great length of the pectoral fins, which enable the fish to suspend itself in the air, as long as the fins continue moist. They are preyed upon by the Dolphin, to escape from whose jaws, they often leap from their native element into the air, and in that case are sometimes caught by birds of prey, on the watch to attack them.

But perhaps the most useful to mankind, and most important as an article of commerce, is the Herring. These fish pay periodical visits to our shores in large shoals, when they are taken in nets by fishermen; many are consumed in a fresh state, but many more are cured, and exported to various parts of the World. Some of the most noted Curers of Herrings are the people of Yarmouth, a seaport on the coast of Norfolk.

ORDER MALACOPTERYGII SUBBRACHIATI.

The next Order is called Malacopterygii Subbrachiati, that is, soft-finned fish, with ventral or abdominal fins under the pectoral. This order contains but three families, the Codfish, the type of the order, the Flat-fishes, and the various sucking fishes.

The Codfish is an important article of commerce, and is taken in the seas of all cold and temperate countries, by means of hooks, baited with pieces of fish, or in some cases with small fish entire. The flesh

is delicately white, and easily digested, as well as of good flavor, it is therefore much valued as an article of food. Besides being eaten while fresh, great numbers are salted, and imported into Roman Catholic countries, to be eaten during Lent, and other fasts peculiar to that religion. Great numbers of them are taken on the bank of Newfoundland, in North America, where the fishery affords employment to a great number of persons.

The Flat Fish, including the Turbot, Brill, and various kinds of Soles, are peculiar for having both eyes on one side of the head, and in many cases different colours on the sides of the body. The upper part is generally brown or dark coloured, the lower a very light colour, in some white, in others pale flesh colour. The design of this arrangement of the eyes and the colour of the skin, appears to be, that as these fishes inhabit shallow water, and swim near the bottom, they require no eye beneath them, but to be constantly watchful above them, so they are furnished with two eyes on the same side. The difference in color appears to favor their escape from many of their enemies, as they are not easily distinguished from the mud or earth close to which they swim. They are all useful for food, and some, as the Turbot and Sole, furnish favorite dishes for the table. The last family of this Order, are the Suckers, so called from the pectoral fins being united by a disk or plate, by which they attach themselves to marine bodies. The skin is slimy, in most cases without scales, but with hard grains embedded in it.

The Remora or Sucking-fish, is known at once by the flat plate on the head, which is furnished with grisly plates running across it, this plate forms a sort of sucker, by means of which, it attaches itself to various bodies, both fixed and moveable, as ships, rocks, and marine bodies.

ORDER MALACOPTERYGII APODES.

The Fourth Order of Fishes is Soft-rayed, but has no ventral fins, and is therefore called Malacopterygii Apodes, (from *a*, without, and *pous*, a foot.) This Order includes the various kinds of Eels, all of which have long slender bodies, covered with small scales, sunk into a thick slimy skin; the gill covers are small and covered with a skin, leaving only a small opening for letting out the water; this enables them to live a long time out of water.

The most remarkable of the Eel family is the Gymnotus, or Electric Eel, found in South America, which possesses a faculty of imparting an electric shock, to any conductor of electricity, which may be applied to it, and consequently to the bodies of animals; this faculty enables the Gymnotus to procure its food, as the shock is often sufficiently strong to deprive a horse of the power of moving, and thereby procures a supply sufficient to last a considerable time. All this family bury themselves in the mud or sand at the bottom of ponds, rivers, and lakes, and feed on small fish, water insects, and such small prey, becoming in their turn a prey to man, and to larger fish.

ORDER LOPHOBRANCHI.

The Fifth Order of Bony Fishes, is called Lophobranchi, or tufted-gilled, (from *lophos*, a tuft, *branchiæ*, gills.) They are all known by the hairy tufts on the gills, and include the Pipe-fish, and the Seahorse or Pegasus. The mouth is at the end of the tubular beak, and the body, instead of scales, is covered with angular shields. The Seahorse, is so called from the fact of its contracting soon after death, forming a figure which resembles a small horse. It has likewise a very broad dorsal fin, whence it derives the name of Pegasus.

ORDER PLECTOGNATHI.

The Sixth and last Order of this Division, is called

Plectognathi or Cheek-joined, (from plecto, I join, and gnathos, the jaw.) The Fishes of this Order are distinguished from all other fish, by having the upper and lower jaws united in one piece, and in some of them, resembling the beak of a parrot. They live on crustacea, shellfish, and sea-weed, and their flesh, which has a musky smell, is at certain seasons of the year, considered to be unwholesome. Several of these fish have the power of dilating or swelling out their stomachs with air, giving the body the appearance of a balloon; when this takes place, the fish floats on the surface of the water, with the belly uppermost. This Order includes the Diodons or Globe Fish, also called the Sun Fish; they have a very deep body, and much resemble a broad fish, cut in two parts, the head of which is the part resembled. The bodies are armed with large spines, which they erect on the appearance of an enemy, at the same time dilating their bodies, when their appearance is so formidable, as to deter most other fish from attacking them. They are found on the warmer coasts of England, but not in numbers, inhabiting chiefly, the seas of warmer climates where they abound.

Cartilaginous Division.

We now proceed to notice the Second or Cartilaginous Division of Fishes, called Chondropterygii, from (chondros, gristle, and pteryx, the fin.) These Fishes are divided into Two Orders, as before-mentioned, viz: Free-gilled, and Fixed-gilled Grisly Fishes. The First Order have the gill-covers arranged so as to open, the same as in the Bony Fish. It includes the Sturgeon family, which are defended by bony plates, embedded in the skin, arranged in rows along the body; the head is long, the mouth small, and entirely destitute of teeth. They are found in most temperate seas, and like many other fishes, they enter rivers at

certain seasons of the year to deposit their spawn, when they are caught in nets. They are very strong while in the water, and sometimes destroy the nets, but once lifted out of the water, their strength seems to leave them. The flesh of the Sturgeon is considered excellent, and is prepared in various ways; in Russia, the fish is cut in long stripes, salted, and hung up to dry. The fish thus prepared, is sold in all the countries bordering the northern shores of the Mediterranean. In Holland and the countries bordering the Baltic, the fish is cut crosswise, and the pieces placed in small tubs to pickle; this is much required at the tables of the rich, in the countries on the continent, but has nearly if not quite, fallen into disuse in this country. The Roe of the Sturgeon is likewise important as an article of trade; it is preserved in a peculiar manner, and called Caviare. It resembles soft soap in consistency, but is of a brown color; this likewise is much eaten on the continent. But the most valuable commodity furnished by the Sturgeon, is called isinglass; it is prepared from the air-bladder, and other parts of the fish, washed and dried. This commodity is chiefly exported from Russia, and many thousands of the fish, are taken in the Danube, from October to January.

The Second Order of Cartilaginous Fish, is the Fixed Gilled Order. *Chondropterygii branchis fixis*; so called from having no gill covers, lifting up and down, as in other fishes, the openings of the gills being merely holes or cross-slits in the sides of the fishes body, varying in number, in different tribes. This Order includes the Sharks, Rays, and Lampreys. The largest and most ferocious of these are the Sharks; they are found in most of the warmer seas, and are much dreaded. They are furnished with a terrible array of teeth, varying in number in the different species. The White Shark, the largest of the tribe, is furnished with six rows of teeth, and these, the animal has the power of

raising or depressing at pleasure ; when at rest, the teeth lie quite flat in the mouth, but on the approach of prey they are raised, and the wounds inflicted are terrible. The young are produced from eggs, and the eggs are covered with a thick leathery membrane for protection, as these animals produce but few at a time ; a merciful provision in nature, for if their eggs and young were as numerous as those of many other fishes, the Codfish for instance, the ocean would not furnish sufficient food for their rapacity. Of their ferocity many instances are related, and doubtless many more would have occurred, but the all-wise Creator, as well as giving the Shark his terrible teeth, has placed the opening of the mouth underneath the Shark's head instead of the end, thereby obliging him to turn on his side, before he can seize any prey, which he may be sufficiently near to. This provision gives the pursued animal an opportunity, slight though it may be, of escaping, and is made use of by the natives of Africa, as a means of more easily conquering their dangerous enemy. The negro plunges into the water, on seeing a Shark, armed with nothing but a knife, and on the approach of the Shark, advances boldly to meet it ; and when sufficiently near each other, for the Shark to turn on his side to seize his foe, the negro watches the opportunity, and diving under water, plunges his knife repeatedly into the belly of the Shark, which usually causes his death ; when he is dragged on shore with a rope, and makes a good feast for the negro and his friends. This Fish is amazingly swift in the water, keeping a head, without apparent effort, of the swiftest ships. He is often known to attend ships on their voyages, for weeks together, watching for whatever may fall, or be thrown overboard ; and in this business he is not very nice, as he will swallow whatever comes in his way, from a "man overboard," to a cannon ball, or a handsaw ; a Shark, in the West Indies, on being

opened was found to contain a tin case, enclosing various articles of considerable weight. Among the Shark family, may be noticed the Blue Shark, the Longtailed Shark, and perhaps the most remarkable of all, the Hammerheaded Shark. This animal has the head fixed crosswise, like the head of a mallet or hammer, whence its name, at the ends of the head are fixed the eyes, the mouth very large, armed with four rows of extremely sharp teeth. This fish is chiefly caught in the Mediterranean Sea. Another curious fish of this family is the Sawfish, common in the Atlantic, it may be known by the production or lengthening of the upper jaw into a long horn or bone, armed on each side with sharp spines or bones, which renders the fish a formidable adversary to many others. In fact, it has been stated that they do not hesitate to attack the largest Cetaceous or Whalelike animals.

The next family we shall notice is that of the Rays, which though numerous in their varieties, resemble each other much, and require an experienced person to distinguish between many of them. They may be known collectively, by their flattened bodies; large, fleshy, expanded pectoral fins, reaching from the head to the tail on each side. The tail in some Rays, is thick and fleshy, resembling the Sharks, but in the true Rays, it is very slender, and often armed with small spines. Many of these fish grow to a very great size, and are very numerous in consequence, as few fish except the larger Sharks and the Cachalot or Spermaceti Whale dare attack them, and in some cases they grow to such an immense size, that no fish known could swallow them. Some of them are small, and as the flesh is thought tolerably good, they are important as an article of food. The most remarkable species of the Ray family, are the Torpedo or Electrical Fish, and the Sting Ray or Fire Flaire. The Torpedo is remarkable for its extraordinary power of numbing or electrifying

any conductor, and therefore, any animal bodies that may be applied to it. It cannot be ascertained that the fish is provided with any particular muscles or organs for performing the operation; they are so much like other Rays, that the difference is not known till it is felt; a person who happens to take up a live one, is however, very glad to let it fall, from the painful sensation he experiences. The Torpedo is thicker in the body than the other Rays, and the head is more circular, the nose not being so much produced.

The Sting Ray, is remarkable for the sharp hard spine in the tail, whence its name; with this weapon which is serrated or notched, it inflicts a terrible and oftentimes a dangerous wound, it is the more dangerous, that it resembles so many others. This weapon is not venomous, as was once supposed; it is fixed to the tail like a quill in the tail of a bird, and some authors assert, that it is, like the quill, shed annually.

The last family of fishes we have to notice is that of the Lamprey. The skeleton of this animal is the most imperfect of all backboned animals; the body is long, slender, and very much like that of an Eel; and it is destitute both of pectoral and ventral fins. The True Lamprey has seven gill openings on the sides, whence it has been vulgarly called Seven-eyes, in some parts of England. They are said to have a curious power of adhering to bodies by suction, and while thus adhering, will draw up a stone heavier than themselves if lifted. Some of them are much valued as food, and are found in most of our rivers, those which come from the sea into the rivers to spawn, being thought the best eating. It lives upon small insects; and lays its spawn under stones at the bottom of rivers, when it finds its power of suction of great advantage, in lifting the stones. By eating too heartily of this fish, King Henry I. is supposed to have surfeited himself.

FINIS.





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the 1990s, the number of people with a diagnosis of schizophrenia has increased in the United Kingdom (Meltzer 1996). The prevalence of schizophrenia in the United Kingdom is estimated to be 1.2% (Meltzer 1996).

There is a growing awareness of the need to improve the lives of people with mental health problems. The United Kingdom has a number of government departments and agencies that are responsible for the care of people with mental health problems. The Department of Health is responsible for the overall policy and strategy for mental health care. The Department of Social Security is responsible for the provision of social security benefits to people with mental health problems. The Department of the Environment is responsible for the provision of housing and other services to people with mental health problems.

The Department of Health has a number of initiatives aimed at improving the lives of people with mental health problems. The Mental Health Act 1983 was amended in 1995 to give people with mental health problems more control over their own care. The Mental Health Act 1995 also introduced a new system of mental health tribunals to review the decisions of the Mental Health Review Board. The Mental Health Act 1995 also introduced a new system of mental health care orders to ensure that people with mental health problems receive the care they need.

The Department of Social Security has a number of initiatives aimed at improving the lives of people with mental health problems. The Social Security Act 1998 introduced a new system of social security benefits for people with mental health problems. The Social Security Act 1998 also introduced a new system of social security benefits for people with mental health problems. The Social Security Act 1998 also introduced a new system of social security benefits for people with mental health problems.

The Department of the Environment has a number of initiatives aimed at improving the lives of people with mental health problems. The Housing Act 1996 introduced a new system of housing benefits for people with mental health problems. The Housing Act 1996 also introduced a new system of housing benefits for people with mental health problems. The Housing Act 1996 also introduced a new system of housing benefits for people with mental health problems.

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